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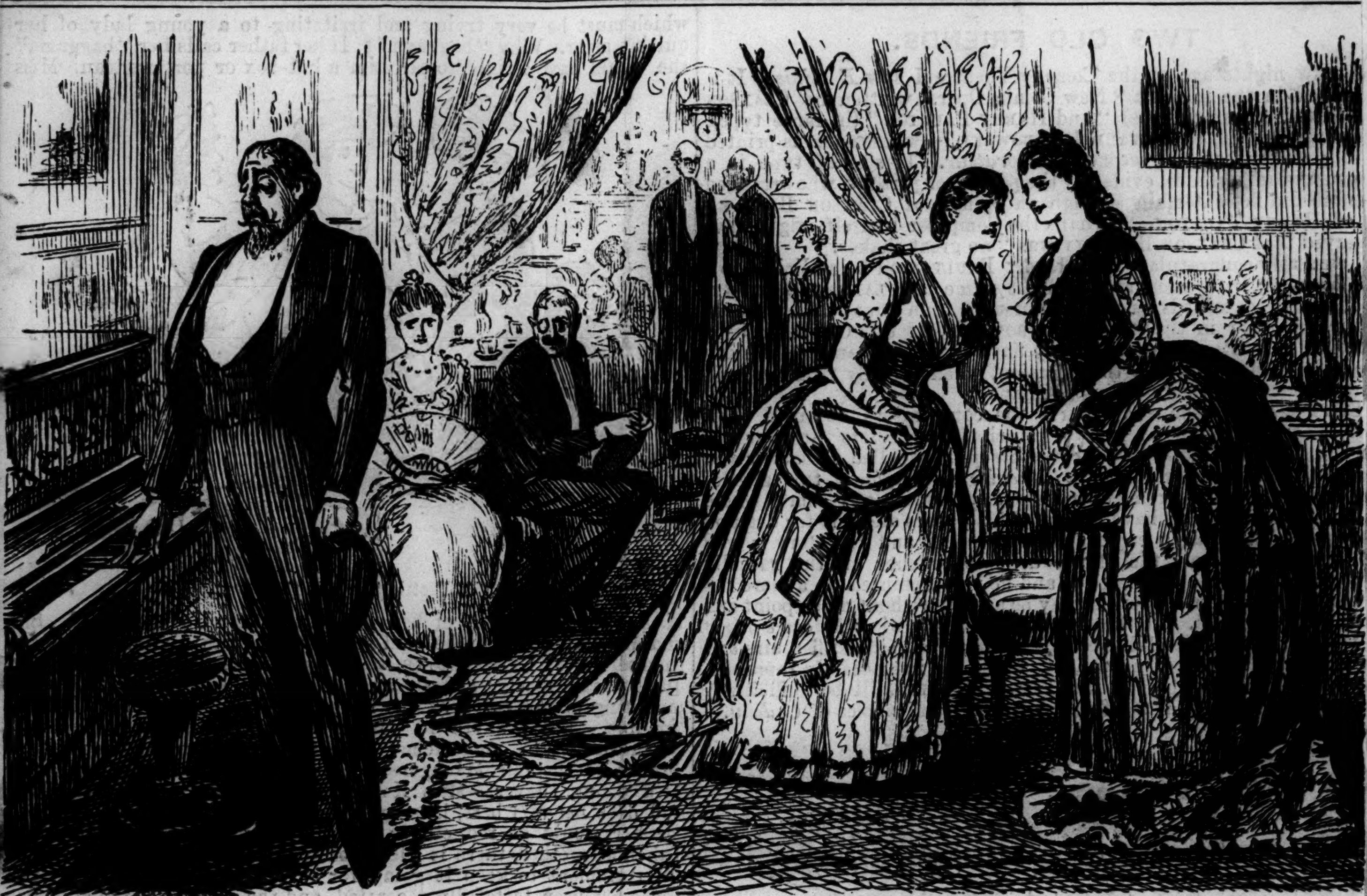
270 PUNCH, OR THE LONDON CHARIVARI. [DECEMBER 5, 1885.



DISTINGUISHED AMATEURS.—THE BARITONE.

"OMNIBUS HOC VITIUM EST CANTORIBUS!"—HORACE.

"DO ASK YOUR HUSBAND TO SING, LIZZIE!" "I WILL, IF YOU WILL PROMISE TO ASK HIM TO *LEAVE OFF!*"

3 DEC

'omnibus hoc vitium est cantoribus, inter amicos
ut nunquam inducant animam cantare rogati
Injussi nunquam desistant!

R. B. Swinton
1895

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MALCOLM's
TREATISE
OF
MUSIC,

Speculative, Practical, and Hiſtorical.

Corrected and Abridged,
By an Eminent MUSICIAN.

Hail Sacred Art! *deſcended from above,*
To crown our mortal Joys: Of thee we learn,
How happy Souls communicate their Raptures;
For thou'rt the Language of the Bleſt in Heaven.
—Divum hominumq; voluptas.

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1776

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BRITISH MUSEUM
3 DEC 42

A TREATISE OF MUSIC.

Of Sound: the Cause of it; and the various Affections of it concerned in Music.

MUSIC is a ſcience of ſounds, whoſe end is pleaſure. Sound is the object in general; or, to ſpeak with the philoſophers, it is the material object. But it is not the buſineſs of muſic, taken in a ſtrict and proper ſenſe, to conſider every phenomenon and property of ſound; that belongs to a more univerſal philoſophy: yet, that we may underſtand what it is in ſounds upon which the formality of muſic depends, *i. e.* whereby it is diſtinguiſhed from other ſciences, of which ſound may alſo be the object: or, what it is in ſounds that makes the particular and proper object of muſic, whereby it obtains its end; we muſt a little conſider the nature of ſound.

Sound is a word that ſtands for every perception that comes by the ear immediately. And for the nature of the thing, it is now generally agreed upon among philoſophers, and alſo confirmed by experience, to be the effect of the mutual colliſion, and conſequent tremulous motion in bodies communicated to the circumambient fluid of air, and propagated through it to the organs of hearing.

A treatiſe that were deſigned for explaining the nature of ſound univerſally, in all its known and remarkable phænomena, ſhould, no doubt, examine very particularly every thing that belongs to the cauſe of it; firſt, The nature of that kind of motion in bodies (excited by their mutual percuſſion) which is communicated to the air; then, how the air receives and propagates that motion to certain diſtances: And, laſtly, How that motion is received by the ear, explaining the ſeveral parts of that organ, and their offices, that are employed in hearing. But as the nature and deſign of what I propoſe and have eſſayed in this treatiſe, does not require ſo large an account of ſounds, I muſt be content only to conſider ſuch phænomena as belong properly to muſic, or ſerve for the better underſtanding of it. In order to which I ſhall a little farther enlarge the preceding general account of the cauſe of ſound. And,

Firſt, That motion is neceſſary in the production of ſound, is a concluſion drawn from all our experience. Again, that motion exiſts, firſt among the ſmall and inſenſible parts of ſuch bodies as are ſonorous, or capable of ſound; excited in them by mutual colliſion and percuſſion, one againſt another, which produces that tremulous motion ſo obſervable in bodies, eſpecially that have a free and clear ſound, as bells, and the ſtrings of muſical inſtruments; then this motion is communicated to, or produces a like motion in the air, or ſuch parts of it as are apt to receive and propagate it: for no motion of bodies at diſtance can affect our ſenſes (or move the parts of our bodies) without the mediation of other bodies, which receive theſe motions from the ſonorous body, and communicate them to the organs of ſenſe; and no other than a fluid can reaſonably be ſuppoſed. But we know this alſo by experience; for a bell in the exhauſted receiver of an air-pump can ſcarcely be heard, which was loud enough before the air was drawn out. In the laſt place, this motion muſt be communicated to thoſe parts of the ear that are the proper and immediate inſtruments of hearing. The mechaniſm of this noble organ has ſtill great difficulties, which all the induſtry of the moſt capable and curious enquirers has not ſurmounted: there are queſtions all unſolved about the uſe of ſome parts, and perhaps other neceſſary parts never yet diſcovered: but the moſt important queſtion among the learned is about the laſt and immediate inſtrument of hearing, or that part which laſt receives the ſonorous motion, and finiſhes what is neceſſary on the part of the organ. Conſult theſe with the philoſophers and anatomiſts; I ſhall only tell you the common opinion, in ſuch general terms as my deſign permits, thus: Next to the external viſible cavity or paſſage into the ear, there is a cavity, of another form, ſeparate from the former by a thin membrane, or ſkin, which is called the tympan or drum of the ear, from the reſemblance it has to that inſtrument: within the cavity of this drum there is always air, like that external air which is the medium of ſound. Now, the external air makes its impreſſion firſt on the membrane of the drum, and this communicates the motion to the internal air, by which it is again communicated to other parts, till it reaches at laſt to the auditory nerve, and there the ſenſation is finiſhed, as far as matter and motion are concerned; and then the mind, by the laws of its union with the body, has that idea we call ſound. It is a curious remark, that there are certain parts fitted for the bending and unbending of the drum of the ear, in order, very probably, to the perceiving ſounds that are raiſed at greater or leſſer diſtances, or whoſe motions have different degrees of force, like what we are more ſenſible of in the eye, which by proper muſcles (which are inſtruments of motion) we can move outwards or inwards, and change the very figure of, that we may better perceive very diſtant or near objects. But I have gone far enough in this.

Leſt what I have ſaid of the cauſe of ſound be too general, particularly with reſpect to the motion of the ſonorous body, which I call the original cauſe, let us go a little farther with it. That motion in any body, which is the immediate cauſe of its ſounding, may be owing to two different cauſes; one is, the mutual percuſſion betwixt it and another body, which is the caſe of drums, bells, and the ſtrings of muſical inſtruments, &c. Another cauſe is, the beating or daſhing of the ſonorous body and the air immediately againſt one another, as in all kind of wind-inſtruments, flutes, trumpets, hautboys, &c. Now in all theſe caſes, the motion which is the conſequence of the mutual percuſſion betwixt the whole bodies, and is the immediate cauſe of the ſonorous motion which the air conveys to our ears, is an inviſible tremulous or undulating motion in the ſmall and inſenſible parts of the body. To explain this;

All viſible bodies are ſuppoſed to be compoſed of a number of ſmall and inſenſible parts, which are of the ſame nature in every body, being perfectly hard and incompreſſible: of theſe infinitely little bodies are compoſed others that are ſomething greater, but ſtill inſenſible, and theſe are different, according to the different figures and union of their component parts: theſe are again ſuppoſed to conſtitute other bodies greater (which have greater differences than the laſt) whoſe different combinations do, in the laſt place, conſtitute thoſe groſs bodies that are viſible and touchable. The firſt and ſmalleſt parts are abſolutely hard; the others are compreſſible, and are united in ſuch a manner, that being, by a ſufficient external impulſe, compreſſed, they reſtore themſelves to their natural, or ordinary ſtate: this compreſſion therefore happening upon the ſhock or impulſe made by one body upon another, theſe ſmall parts or particles, by their reſtitutive power (which we alſo call elaſtic faculty) move to and again with a very great velocity or ſwiftneſs, in a tremulous and undulating manner, ſomething like the viſible motions of groſſer ſprings, as the chord of a muſical inſtrument; and this is what we may call the ſonorous motion which is propagated to the ear. But obſerve that it is the inſenſible motion of theſe particles next to the ſmalleſt, which is ſuppoſed to be the immediate cauſe of ſound; and of theſe, only thoſe next the ſurface can communicate with the air; their motion is performed in very ſmall ſpaces, and with extreme velocity; the motion of the whole, or of the greater parts being no further concerned than as they contribute to the other.

And this is the hypotheſis upon which Monſieur Perrault, of the Royal Society in France, explains the nature and phenomæna of ſound, in his curious treatiſe upon that ſubject, "Eſſais de Phyſique," tom. 2. Du Bruit. How this theory is ſupported I ſhall briefly ſhew, while I conſider a few applications of it.

Of thoſe hard bodies that ſound by percuſſion of others, let us conſider a bell: ſtrike it with any other hard body, and while it ſounds we can diſcern a ſenſible tremor in the ſurface, which ſpreads more ſenſibly over the whole, as the ſhock is greater. This motion is not only in the parts next the ſurface, but in all the parts through the whole ſolidity, becauſe we can perceive it alſo in the inner ſurface of the bell, which muſt be by communication with thoſe parts that are immediately touched by the ſtriking body. And this is proved by the ceaſing of the ſound when the bell is touched in any other part; for this ſhews the eaſy and actual communication of the motion. Now this is plainly a motion of the ſeveral ſmall and inſenſible parts changing their ſituations with reſpect to one another, which being ſo many, and ſo cloſely united, we cannot perceive their motions ſeparately and diſtinctly, but only that trembling which we reckon to be the effect of the confuſion of an infinite number of little particles ſo cloſely joined and moving in infinitely ſmall ſpaces. Thus far any body will eaſily go with the hypotheſis: but Monſieur Perrault carries it farther, and affirms, That that viſible motion of the parts is no otherwiſe the cauſe of the ſound than as it cauſes the inviſible motion of the yet ſmaller parts (which he calls particles, to diſtinguiſh them from the other which he calls parts, the leaſt of all being with him corpuſcles) And this he endeavours to prove by other examples, as of chords and wind-inſtruments. Let us conſider them.

Take a chord or ſtring of a muſical inſtrument, ſtretched to a ſufficient degree for ſounding, when it is fixt at both ends, we make it ſound by drawing the chord from its ſtrait poſition, and then letting it go; (which has the ſame effect as what we properly call percuſſion) the parts by this drawing, whereby the whole is lengthned, being put out of of their natural ſtate, or that which they had in the ſtrait line, do by their elaſticity reſtore themſelves, which cauſes that vibratory motion of the whole, whereby it moves to and again beyond the ſtrait line, in vibrations gradually ſmaller, till the motion ceaſe and the chord recover its former poſition. Now the ſhorter the chord is, and the more it is ſtretched in the ſtrait line, the quicker theſe vibrations are: but however quick they are, Monſieur Perrault denies them to be the immediate cauſe of the ſound; becauſe, ſays he, in a very long chord, and not very ſmall, ſtretched only ſo far as that it may give a diſtinct ſound, we can perceive with our eye, beſides the vibrations of the whole chord, a more confuſed tremor of the parts, which is more diſcernible towards the middle of the chord, where the parts vibrate in greater ſpaces in the motion of the whole; this laſt motion of the parts which is cauſed by the firſt vibrations of the whole, does again occaſion a motion in the leſſer parts or particles, which is the immediate cauſe of the ſound. And this he endeavours to confirm by this experiment, *viz.* Take a long chord (he ſays, he made it with one of thirty ſoot) and make it ſound; then wait till the ſound quite ceaſe, and then alſo the viſible undulations of the whole chord will ceaſe: if immediately upon this ceaſing of the ſound, you approach the chord very ſoftly with the nail of your finger, you will perceive a tremulous motion in it, which is the remaining ſmall vibrations of the whole chord, and of the parts cauſed by the vibrations of the whole. Now theſe vibrations of the parts, are not the immediate cauſe of ſound; elſe how comes it that while they are yet in motion they raiſe no ſound? The anſwer perhaps is this, That the motion is become too weak to make the ſound to be heard at any great diſtance, which might be heard were the tympan of the ear as near as the nail of the finger, by which we perceive the motion. But to carry off this, Mr. Perrault ſays, That as ſoon as this ſmall motion is perceived, we ſhall hear it ſound; which is not occaſioned by renewing or augmenting the greater vibrations, becauſe the finger is not ſuppoſed to ſtrike againſt the chord, but this againſt the finger, which ought rather to ſtop that motion; the cauſe of this renewed ſound therefore is probably, that this weak motion of the parts, which is not ſufficient to move the particles (whoſe motion is the firſt that ceaſes) receives ſome aſſiſtance from the daſhing againſt the nail, whereby they are enabled to give the particles that motion which is neceſſary for producing the ſound. But leſt it ſhould ſtill be thought, that this encounter with the nail may as well be ſuppoſed to increaſe the motion of the parts to a degree fit for ſounding, as to make them capable of moving the particles; we may conſider, that the particles being at reſt in the parts, and having each a common motion with the whole part, may very eaſily be ſuppoſed to receive a proper and particular motion by that ſhock; in the ſame manner that bodies which are relatively at reſt in a ſhip, will be ſhaken and moved by the ſhock of the ſhip againſt any body that can any thing conſiderably oppoſe its motion. Now for as ſimple as this experiment appears to be, I am afraid it cannot be ſo eaſily made as to give perfect ſatisfaction, becauſe we can hardly touch a ſtring with our nail but it will ſound.

But Mr. Perrault finiſhes the proof of his hypotheſis by the phænomena of wind-inſtruments. Take for example a flute; we make it ſound by blowing into a long, broad, and thin canal, which conveys the air thrown out of the lungs, till it is daſhed againſt that thin ſolid part which we call the tongue, or wind-cutter, that is oppoſite to the lower orifice of the foreſaid canal; by which means the particles of that tongue are compreſſed, and by their reſtitutive motion, they communicate to the air a ſonorous motion, which being immediately thrown againſt the inner concave ſurface of the flute, and moving its particles, the motion communicated to the air, by all theſe particles both of the tongue and inner ſurface, makes up the whole ſound of the flute.

Now to prove that only the very ſmall particles of the inner ſurface and edge of the tongue are concerned in the ſound of the flute, we muſt conſider, that flutes of different matter, as metal, wood, or bone, being of the ſame length and bore, have none, or very little ſenſible difference in their ſound; nor is this ſenſibly altered by the different thickneſs of the flute betwixt the outer and inner ſurface; nor in the laſt place, is the ſound any way changed by touching the flute, even though it be hard preſſed, as it always happens in bells and other hard bodies that ſound by mutual percuſſion. All this Mr. Perrault accounts for by his hypotheſis, thus: he tells us, That as the corpuſcles are the ſame in all bodies, the particles which they immediately conſtitute, have very ſmall differences in their nature and form; and that the ſpecific differences of viſible bodies, depend on the differences of the parts made up of theſe particles, and the various connection of theſe parts, which make them capable of different modifications of motion. Now, hard bodies that ſound by mutual percuſſion one againſt another, owe their ſounding to the vibrations of all their parts, and by theſe to the inſenſible motions of their particles; but according to the differences of the parts and their connections, which make them, either ſilver, or braſs, or wood, &c. ſo are the differences of their ſounds. But in wind-inſtruments (for example, flutes) as there are no ſuch remarkable differences anſwering to their matter, their ſound can only be owing to the inſenſible motion of the particles of the ſurface: for theſe being very little difference in all bodies, if we ſuppoſe the ſound is owing to their motions only, it can have none, or very ſmall differences: and becauſe we find this true in fact, it makes the hypotheſis extremely probable. I have never indeed ſeen flutes of any matter but wood, except of the ſmall kind we call flagellets, of which I have ſeen ivory ones, whoſe ſound has no remarkable difference from a wooden one; and therefore I muſt leave ſo much of this proof upon Monſieur Perrault's credit. As to the other part, which is no leſs conſiderable, that no compreſſion of the flute can ſenſibly change its ſound, it is certain, and every body can eaſily try it. To which we may add, That flutes of different matter are ſounded with equal eaſe, which could not well be if their parts were to be moved; for in different bodies theſe are differently moveable. But I muſt make an end of this part, in which I think it is made plain enough, that the motion of a body which cauſes a ſounding motion in the air, is not any motion which we can poſſibly give to the whole body, wherein all the parts are moved in one common direction and velocity; but it is the motion of the ſeveral ſmall and undiſtinguiſhable parts, which being compreſſed by an external force, do, by their elaſtic power, reſtore themſelves, each by a motion particular and proper to itſelf. But whether you will diſtinguiſh parts and particles as Mr. Perrault does, I leave to yourſelves, my deſign not requiring any accurate determination of this matter. And now to come nearer to our ſubject, I ſhall next conſider the differences and affections of ſounds that are any way concerned in muſic.

Sounds are as various, or have as many differences, as the infinite variety of things that concur in their production; which may be reduced to theſe general heads: Firſt, The quantity, conſtitution, and figure of the ſonorous body; with the manner of percuſſion, and the conſequent velocity of the vibrations of the parts of the body and the air; alſo their equality and uniformity, or inequality and irregularneſs. Secondly, The conſtitution and ſtate of the fluid medium through which the motion is propagated. Thirdly, The diſpoſition of the ear that receives that motion. And, fourthly, The diſtance of the ear from the ſonorous body. To which we may add, laſtly, The conſideration of the obſtacles that interpoſe betwixt the ſonorous body and the ear; with other adjacent bodies that, receiving an impreſſion from the fluid ſo moved, re-act upon it, and give new modification to the motion, and conſequently to the ſound. Upon all theſe do our different perceptions of ſound depend.

The variety and differences of ſounds, owing to the various degrees and combinations of the conditions mentioned, are innumerable; but to our preſent deſign we are to conſider the following diſtinctions.

1. Sounds, come under the ſpecific diſtinction, according to the kinds of bodies from which they proceed: thus metal is eaſily diſtinguiſhed from other bodies by the ſound; and among metals there is great difference of ſound, as is diſcernible, for example, betwixt gold, ſilver and braſs. And for the purpoſe in hand, a moſt notable difference is that of ſtringed and wind-inſtruments of muſic, of which there are alſo ſub-diviſions: theſe differences depend, as has been ſaid, upon the different conſtitutions of theſe bodies; but they are not ſtrictly within the conſideration of muſic, not the mathematical part of it at leaſt, though they may be brought into the practical; of which afterwards.

2. Experience teaches us, that ſome ſounds can be heard, by the ſame ear, at greater diſtances than others; and when we are at the ſame diſtance from two ſounds, I mean from the ſonorous body or the place where the ſound firſt riſes, we can determine (for we learn it by experience and obſervation) which of the two will be heard fartheſt: by this compariſon we have the idea of a difference whoſe oppoſite terms are called loud and low (or ſtrong and weak.) This difference depends both upon the nature of different bodies, and upon other accidental circumſtances, ſuch as their figure; or the different force in the percuſſion; and frequently upon the nature of the circumjacent bodies, that contribute to the ſtrengthening of the ſound, that is a conjunction of ſeveral ſounds ſo united as to appear only as one ſound: but as the union of ſeveral ſounds gives occaſion to another diſtinction, it ſhall be conſidered again, and we have only to obſerve here that it is always the cauſe of loudneſs; yet this difference belongs not ſtrictly to the theory of muſic, though it is brought into the practice, as that in the firſt article.

3. There is an affection or property of ſound, whereby it is diſtinguiſhed into acute, ſharp or high; and grave, flat or low. The idea of this difference you will get by comparing ſeveral ſounds or notes of a muſical inſtrument, or of a human voice ſinging. Obſerve the term *low*, is ſometimes oppoſed to loud, and ſometimes to acute, which yet are very different things: loudneſs is very well meaſured by the

diſtance or ſphere of audibility, which makes the notion of it very clear. Acuteneſs, is ſo far different, that a voice or ſound may aſcend or riſe in degree of acuteneſs, and yet loſe nothing of its loudneſs, which can eaſily be demonſtrated upon any inſtrument, or even in the voice; and particularly if we compare the voice of a boy and a man.

This relation of acuteneſs and gravity is one of the principal things concerned in muſic, the nature of which ſhall be particularly conſidered afterwards; and I ſhall here obſerve that it depends altogether upon the nature of the ſonorous body itſelf, and the particular figure and quantity of it; and in ſome caſes upon the part of the body where it is ſtruck. So that, for example, the ſounds of two bells of different metals, and the ſame ſhape and dimenſions, being ſtruck in the ſame place, will differ as to acuteneſs and gravity; and two bells of the ſame metal will differ in acuteneſs, if they differ in ſhape or in magnitude, or be ſtruck in different parts: ſo in chords, all other things being equal, if they differ either in matter, or dimenſions, or the degree of tenſion, as being ſtretched by different weights, they will alſo differ in acuteneſs.

But we muſt carefully remark, that acuteneſs and gravity, alſo loudneſs and lowneſs are but relative things; ſo that we cannot call any ſound acute or loud, but with reſpect to another which is grave or low in reference to the former; and therefore the ſame ſound may be acute or grave, alſo loud or low in different reſpects. Again, theſe relations are to be found not only between the ſounds of different bodies, but alſo between different ſounds of the ſame body, for different force in the percuſſion will cauſe a louder or lower ſound, and ſtriking the body in different parts will make an acuter or graver ſound, as we have remarkably demonſtrated in a bell, which as the ſtroke is greater gives a greater or louder ſound, and being ſtruck nearer the open end, gives the graver ſound. How theſe degrees are meaſured, we ſhall learn again, only mind that theſe degrees of acuteneſs and gravity are alſo called different and diſtinguiſhable tones or tunes of a voice or ſound; ſo we ſay one ſound is in tune with another when they are in the ſame degree: acute and grave being but relations, we apply the name of tune to them both, to expreſs ſomething that is conſtant and abſolute which is the ground of the relation; in like manner as we apply the name *magnitude* both to the things we call great and little, which are but relative ideas: each of them have a certain magnitude, but only one of them is great and the other little when they are compared; ſo of two ſounds each has a certain tune, but only one is acute and the other grave in compariſon.

4. There is a diſtinction of ſounds, whereby they are denominated long or ſhort; which relates to the duration, or continued, and ſenſibly uninterrupted exiſtence of the ſound. This is a thing of very great importance in muſic; but to know how far, and in what reſpect it belongs to it, we muſt diſtinguiſh betwixt the natural and artificial duration of ſound. I call that the natural duration or continuity of ſound, which is leſs or more in different bodies, owing to their different conſtitutions, whereby one retains the motion once received longer than another does; and conſequently the ſound continues longer (though gradually weaker) after the external impulſe ceaſes; ſo bells of different metals, all other things being equal and alike, have different continuity of ſound after the ſtroke: And the ſame is very remarkable in ſtrings of different matter: there is too a difference in the bell or ſtring, according to the force of the percuſſion. This continuity is ſometimes owing to the ſudden reflection of the ſound from the ſurface of neighbouring bodies, which is not ſo properly the ſame ſound continued, as a new ſound ſucceeding the firſt ſo quickly as to appear to be only its continuation: But this duration of ſound does not properly belong to muſic, wherefore let us conſider the other. The artificial continuity of ſound is, that which depends upon the continued impulſe of the efficient cauſe upon the ſonorous body for a longer or ſhorter time, ſuch are the notes of a voice or any wind-inſtrument, which are longer or ſhorter as we continue to blow into them; or, the notes of a violin and all ſtringed inſtruments that are ſtruck with a bow, whoſe notes are made longer or ſhorter by ſtrokes of different lengths or quickneſs of motion; for a long ſtroke, if it is quickly drawn, may make a ſhorter note than a ſhort ſtroke drawn ſlowly. Now this kind of continuity is properly the ſucceſſion of ſeveral ſounds, or the effect of ſeveral diſtinct ſtrokes, or repeated impulſes, upon the ſonorous body, ſo quick that we judge it to be one continued ſound, eſpecially if it is continued in one degree of ſtrength and loudneſs; but it alſo muſt be continued in one degree of tune, elſe it cannot be called one note in muſic. And this

leads me naturally to conſider the very old and notable diſtinction of a twofold motion of ſound, thus,

Sound may move through various degrees of acuteneſs in a continual flux, ſo as not to reſt on any degree for any aſſignable, or at leaſt ſenſible time; which the ancients called the continuous motion of ſound, proper only to ſpeaking and converſation. Or, 2do. it may paſs from degree to degree, and make a ſenſible ſtand at every pitch, ſo as every degree ſhall be diſtinct; this they called the diſcrete or diſcontinued motion of ſound, proper only to muſic or ſinging. But there may be no obſcurity here, conſider, that as the ideas of motion and diſtance are inſeparably connected, ſo they belong in a proper ſenſe to bodies and ſpace; and whatever other thing they are applied to, it is in a figurative and metaphorical ſenſe, as here to ſounds; yet the application is very intelligible, as I ſhall explain it. Voice or ſound is conſidered as one invidual being, all other differences being neglected except that of acuteneſs and gravity, which is not conſidered as conſtituting different ſounds, but different ſtates of the ſame ſound; which is eaſy to conceive: and ſo the ſeveral degrees or pitches of tune, are conſidered as ſeveral places in which a voice may exiſt. And when we hear a ſound ſucceſſively exiſting in different degrees of tune, we conceive the voice to have moved from the one place to the other; and then it is eaſy to conceive a kind of diſtance between the two degrees of places; for as bodies are ſaid to be diſtant, between which other bodies may be placed, ſo two ſounds are ſaid to be at diſtance, with reſpect of tune, between which other degrees may be conceived, that ſhall be acute with reſpect to the one, and grave with reſpect to the other. But when the voice continues in one pitch, though there may be many interruptions and ſenſible reſts whereby the ſound doth end and begin again, yet there is no motion in that caſe, the voice being all the time in one place. Now this motion, in a ſimple and proper ſenſe, is nothing elſe but the ſucceſſive exiſtence of ſeveral ſounds differing in tune. When the ſucceſſive degrees are ſo near, that like the colours of a rainbow, they are as it were loſt in one another, ſo that in any ſenſible diſtance there is an indefinite number of degrees, ſuch kind of ſucceſſion is of no uſe in muſic; but when it is ſuch that the ear is judge of every ſingle difference, and can compare ſeveral differences, and apply ſome known meaſure to them, there the object of muſic does exiſt; or when there is a ſucceſſion of ſeveral ſounds diſtinct by ſenſible reſts, though all in the ſame tune, ſuch a ſucceſſion belongs alſo to muſic.

From this twofold motion explained, we ſee a twofold continuity of ſound, both ſubject to certain and determinate meaſures of duration; the one is that ariſing from the continuous motion mentioned, which has nothing to do in muſic: the other is the continuity or uninterrupted exiſtence of ſound in one degree of tune. The differences of ſounds in this reſpect, or the various meaſures of long and ſhort, or (which is the ſame at leaſt a conſequence) ſwift and ſlow in the ſucceſſive degrees of ſound, while it moves in the ſecond manner make a principal and neceſſary ingredient in muſic; whoſe effect is not inferior to any other thing concerned in the practice; and is what deſerves to be very particularly conſidered, though indeed it is not brought under ſo regular and determinate rules as the differences of tune.

5. Sounds are either ſimple or compound; but there is a twofold ſimplicity and compoſition to be conſidered here; the firſt is the ſame with what we explained in the laſt article, and relates to the number of ſucceſſive vibrations of the parts of the ſonorous body, and of the air, which comes ſo faſt upon the ear that we judge them all to be one continued ſound, though it is really a compoſition of ſeveral ſounds of ſhorter duration. And our judging it to be one, is very well compared to the judgment we make of that apparant circle of fire, cauſed by putting the fired end of a ſtick into a very quick circular motion; for ſuppoſe the end of the ſtick in any point of that circle which it actually deſcribes, the idea we receive of it there continues till the impreſſion is renewed by the ſudden return; and this being true of every point, we muſt have the idea of a circle of fire; the only difference is, that the end of the ſtick has actually exiſted in every point of the circle, whereas the ſound has had interruptions, though inſenſible to us becauſe of their quick ſucceſſion; but the things we compare are, the ſucceſſion of the ſounds making a ſenſible continuity with reſpect to time, and the ſucceſſion of the end of the ſtick in every point of the circle after a whole revolution; for it is by this we judge it to be a circle, making a continuity with reſpect to ſpace. The author of the Elucidationes Phyſicæ upon D' Cartes muſic, illuſtrates it in this manner, ſays he, As ſtanding corns are bended by one blaſt of wind, and before they can recover themſelves

the wind has repeated the blaſt, ſo that the corn is ſtanding in the ſame inclined poſition for a certain time, ſeems to be the effect of one ſingle action of the wind, which is truly owing to ſeveral diſtinct operations; in like manner the ſmall branches (capillamenta) of the auditory nerve, reſembling ſo many ſtalks of corn, being moved by one vibration of the air, and this repeated before the nerve can recover its ſituation, gives occaſion to the mind to judge the whole effect to be one ſound. The nature of this kind of compoſition being ſo far explained, we are next to conſider what ſimplicity in this ſenſe is; and I think it muſt be the effect of one ſingle vibration, or as many vibrations as are neceſſary to raiſe in us the idea of ſound; but perhaps it may be a queſtion, whether we ever have, or if we can raiſe ſuch an idea of ſound: there may be alſo another queſtion, whether any idea of ſound can exiſt in the mind for an indiviſible ſpace of time; the reaſon of this queſtion is, that if every ſound exiſts for a finite time, it can be divided into parts of a ſhorter duration, and then there is no ſuch thing as an abſolute ſimplicity of this kind, unleſs we take the notion of it from the action of the external cauſe of ſound, *viz.* the number of vibrations neceſſary to make ſound actually exiſt, without conſidering how long it exiſts; but as it is not probable that we can ever actually produce this, *i. e.* put a body in a ſounding motion, and ſtop it preciſely when there are as many vibrations finiſhed as are abſolutely neceſſary to make ſound, we muſt reckon the ſimplicity of ſound, conſidered in this manner, and with reſpect to practice, a relative thing; that being only ſimple to us which is the moſt ſimple, either with reſpect to the duration or the cauſe, that we ever hear: but whether we conſider it in the repeated action of the cauſe or the conſequent duration, which is the ſubject of the laſt article, there is ſtill another ſimplicity and compoſition of ſounds very different from that, and of great importance in muſic, which I ſhall next explain.

A ſimple ſound is the product of one voice or individual body, as the ſound of one flute or one man's voice. A compound ſound conſiſts of the ſounds of ſeveral diſtinct voices or bodies, all united in the ſame individual time and meaſure of duration, *i. e.* all ſtriking the ear together, whatever their other difference may be. But we muſt here diſtinguiſh a natural and artificial compoſition; to underſtand this, remember,

member, that the air being put into motion by any body, communicates that motion to other bodies; the natural compoſition of ſounds is therefore, that which proceeds from the manifold reflections of the firſt ſound, or that of the body which firſt communicates ſounding motion to the air, as the flute or violin in one's hand; theſe reflections, being many, according to the circumſtances of the place, or the number, nature, and ſituations of the circumjacent bodies, make ſounds more or leſs compound. This is a thing we know by common exeprience; we can have a hundred proofs of it every day by ſinging, or ſounding any muſical inſtrument in different places, either in the fields or within doors; but theſe reflections muſt be ſuch as returning very ſuddenly do not produce what we call an echo, and have only this effect, to increaſe the ſound, and make an agreeable reſonance; but ſtill in the ſame tune with the original note; or, if it be a compoſition of different degrees of tune, they are ſuch as mix and unite, ſo that the whole agrees with that note. But this compoſition is not under rules of art; for though we learn by experience how to diſpoſe theſe circumſtances that they may produce the deſired effect, yet we neither know the number or different tunes of the ſounds that enter into this compoſition; and therefore they come not under the muſician's direction in what is hereafter called the compoſition of muſic; his care being only about the artificial compoſition, or that mixture of ſeveral ſounds, which being made by art, are ſeparable and and diſtinguiſhable one from another. So the diſtinct ſounds of ſeveral voices or inſtruments, or ſeveral notes of the ſame inſtrument, are called ſimple ſounds, in diſtinction from the artificial compoſition, in which to anſwer the end of muſic, the ſimples muſt have ſuch an agreement in all relations, but principally and above all in acuteneſs and gravity, that the ear may receive the mixture with pleaſure.

6. There remains another diſtinction of ſound neceſſary to be conſidered, whereby they are ſaid to be ſmooth and even, or rough and harſh; alſo clear or blunt, hoarſe and obtuſe; the ideas of theſe differences muſt be ſought from obſervations; as to the cauſe of them, they depend upon the diſpoſition and ſtate of the ſonorous body, or the circumſtances of the place. Smooth and rough ſounds depend upon the body principally; we have a notable example of rough and harſh ſound in ſtrings that are unevenly and not of the ſame conſtitution and dimenſion throughout; and for

this reaſon that their ſounds are very grating, they are called falſe ſtrings. I will let you in few words hear how Monſieur Perrault accounts for this. He affirms that there is no ſuch thing as a ſimple ſound, and that the ſound of the ſame bell or chord is a compound of the ſounds of the ſeveral parts of it; ſo that where the parts are homogeneous, and the dimenſions or figure uniform, there is always ſuch a perfect union and mixture of all theſe ſounds that makes one uniform, ſmooth and evenly ſound; and the contrary produces harſhneſs; for the likeneſs of parts and figure makes an uniformity of vibrations, whereby a great number of ſimilar and coincident motions conſpire to fortify and improve each other mutually, and unite for the more effectual production of the ſame effect. He proves his hypotheſis by the phenomena of a bell, which differs in tone according to the part you ſtrike, and yet ſtrike it any where there is a motion over all the parts; he conſiders therefore the bell as compoſed of an infinite number of rings, which according to their different dimenſions have different tones, as chords of different lengths have (cæteris paribus) and when it is ſtruck, the vibrations of the parts immediately ſtruck ſpecify the tone, being ſupported by a ſufficient number of conſonant tones in other parts: and to confirm this he relates a very remarkable thing; he ſays, He happened in a place where a bell ſounded a fifth acuter than the tone it uſed to give in other places; which in all probability, ſays he, was owing to the accidental diſpoſition of the place, that was furniſhed with ſuch an adjuſtment for reflecting that particular tone with force, and ſo unfit for reflecting others, that it abſolutely prevailed and determined the concord and total ſound to the tone of that fifth. If we conſider the ſound of a violin, and all ſtringed inſtruments, we have a plain demonſtration that every note is the effect of ſeveral more ſimple ſounds; for there is not only the ſound reſulting from the motion of the ſtring, but alſo that of the motion of the parts of the inſtrument; that this has a very conſiderable effect in the total ſound is certain becauſe we are very ſenſible of the tremulous motion of the parts of the violin, and eſpecially, becauſe the ſame ſtring upon different violins ſounds very differently, which can be for no other reaſon but the different conſtitutions, of the parts of theſe inſtruments, which being moved by communication with the ſtring increaſe the ſound, and make it more or leſs agreeable, according to their different natures:

But Perrault affirms the ſame of every ſtring in itſelf without conſidering the inſtrument; he ſays, every part of the ſtring has its particular vibrations different from the groſs and ſenſible vibrations of the whole, and theſe are the cauſes of different motions (and ſounds) in the particles; which being mixed and unite, as was ſaid of the ſounds that compoſe the total ſound of a bell, make an uniform and evenly compoſition, wherein not only one tone prevails, but the mixture is ſmooth and agreeable; but when the parts are unevenly and irregularly conſtitute, the ſound is harſh and the ſtring from that called falſe. And therefore ſuch a ſtring, or other body having the like fault, has no certain and diſtinct tone, being a compoſition of ſeveral tones that do not unite and mix ſo as to have one predominant that ſpecifies the total tone.

Again for clear or hoarſe ſounds they depend upon circumſtances that are accidental to the ſonorous body; ſo a man's voice, or the ſound of an inſtrument, will be hollow and hoarſe, if it is raiſed within an empty hogſhhead, which is clear and bright out of it; the reaſon is very plainly the mixture of other and different ſounds raiſed by reflection, that corrupt and change the ſpecies of the primitive and direct ſound.

Now that ſounds may be fit for obtaining the end of muſic they ought to be ſmooth and clear; eſpecially the firſt, becauſe if they have not one certain and diſcernible tone, capable of being compared to others, and ſtanding to them in a certain relation of acuteneſs, whoſe differences the ear may be able to judge of and meaſure, they cannot poſſibly anſwer the end of muſic, and therefore are no part of the object of it.

But there are alſo ſounds which have a certain tone, yet being exceſſive, either in acuteneſs or gravity, bear not that juſt proportion to the capacity of the organs of hearing, as to afford agreeable ſenſations. Upon the whole then we ſhall call that harmonic or muſical ſound, which being clear and even is agreeable to the ear, and gives a certain and diſcernible tune (hence alſo called tunable ſound) which is the ſubject of the whole theory of harmony.

Thus we have conſidered the properties and affections of ſound that are any way neceſſary to the ſubject in hand; and of all the things mentioned, the relation of acuteneſs and gravity, or the tune of ſounds, is the principal ingredient in muſic; the diſtinctneſs and determinateneſs of which relation gives ſound the denomination of harmonical or muſical: next to which are the various meaſures of duration. There is nothing in ſounds without theſe that can make muſic; a juſt theory whereof abſtracts from all other things, to conſider the relations of ſounds in the meaſures of tune and duration; though indeed in the practice other differences are conſidered (of which ſomething more may be ſaid afterwards) but they are ſo little, compared to the other two, and under ſo very general and uncertain theory, that I do not find they have ever been brought into the definition of muſic.

A DEFINITION and DIVISION of MUSIC.

WE may from what is already ſaid affirm, that muſic has for its object, in general, ſound; and particularly, ſounds conſidered in their relations of tune and duration, as under that formality they are capable of affording agreeable ſenſations. I ſhall therefore define muſic, a ſcience that teaches how ſounds under certain meaſures of tune and time, may be produced; and ſo ordered or diſpoſed, as in conſonance (*i. e.* joint ſounding) or ſucceſſion, or both, they may raiſe agreeable ſenſations.

Pleaſure I have ſaid is the immediate end of muſic; I ſuppoſe it therefore as a principle, that the objects propoſed, are capable, being duly applied, to affect the mind agreeably: nor is it a precarious principle; experience proves, and we know by the infallible teſtimony of our ſenſes, that ſome ſimple ſounds ſucceed others upon the ear with a poſitive pleaſure, others diſagreeably; according to the certain relations of tune and time; and ſome compound ſounds are agreeable, others offenſive to the ear; and that there are degrees and variety in this pleaſure, according to the various meaſures of theſe relations. For what pretences are made to the application of muſic to ſome other purpoſes than mere pleaſure or recreation, as theſe are obtained chiefly by means of that pleaſure, they cannot be called the immediate end of it.

From the definition given, we have the ſcience divided into theſe two general parts. Firſt, The knowledge of the Materia Muſica, or, how to produce ſounds, in ſuch relations of tune and time as ſhall be agreeable in conſonance or ſucceſſion, or both. I do not mean the actual producing of the ſounds by an inſtrument or voice, which is merely the mechanical or effective part; but the knowledge of the various relations of tune and time, which are the eſſential principles out of which the pleaſure ſought ariſes, and upon which it depends. This is the pure ſpeculative part of muſic. Second, How theſe principles are to be applied; or, how ſounds, in the relations that belong to muſic (as theſe are determined in the firſt part) may be ordered, and variouſly put together in ſucceſſion and conſonance ſo as to anſwer the end; which part we rightly call, The art of compoſition; and it is properly the practical part of muſic.

Some have added a third part, *viz.* The knowledge of inſtruments; but as this depends altogether upon the firſt, and is only an application or expreſſion of it, it could never be brought regularly into the definition; and ſo can be no part of the diviſion of the ſcience; yet may it deſerve to be treated of, as a conſequent or dependent of it, and neceſſary to be underſtood for the effectual part. As this has no ſhare in my deſign, I ſhall detain you but while I ſay, in a few words, what I think ſuch a treatiſe ſhould contain. And 1mo, There ſhould be a theory of inſtruments, giving an account of their frame and conſtruction, particularly, how, ſuppoſing them completely provided of all their apparatus, each contains in it the principles of muſic, *i. e.* how the ſeveral degrees of tune pertaining to muſic are to be found upon the inſtruments. The ſecond part ſhould contain the practice of inſtruments, in ſuch directions as might be helpful for the dextrous and nice handling of them, or the elegant performance of muſic: and here might be annexed rules for the right uſe of the voice. But after all, I believe theſe things will be more ſucceſsfully done by a living inſtructor, I mean a ſkilful and experienced maſter, with the uſe of his voice or inſtrument: though I doubt not ſuch might help us too by rules; but I have done with this.

You muſt next obſerve with me, that as the art of common writing is altogether diſtinct from the ſciences to which it is ſubſervient by preſerving what would otherwiſe be loſt, and communicating thoughts at diſtance; ſo there is an art of writing proper to muſic, which teaches how, by a fit and convenient way of repreſenting all the degrees and meaſures of ſound, ſufficient for directing in the executive part, one who underſtands how to uſe his voice or inſtrument, the artiſt when he has invented a compoſition anſwering the principles and end of muſic, may preſerve it for his own uſe, or communicate it to another preſent or abſent. To this I have very juſtly given a place in the following work, as it is a thing of a general concern to muſic, though no part of the ſcience, and merely a handmaid to the practice; and particularly as the knowledge of it is neceſſary for carrying on my deſign. I now return to the diviſion above made, which I ſhall follow in explaining this ſcience.

The firſt general branch of this ſubject, which is the contemplative part, divides naturally into theſe. Firſt, The knowledge of the relations and meaſures of tune. And, ſecondly, of time. The firſt is properly what the ancients properly called *Harmonica*, or the doctrine of harmony in ſounds; becauſe it contains an explication of the grounds, with the various meaſures and degrees of the agreement (harmony) of ſounds in reſpect of their tune. The other they called *Rythmica*, becauſe it treats of the numbers of ſounds or notes with reſpect to time, containing an explication of the meaſures of long and ſhort, or ſwift and ſlow in the ſucceſſion of ſounds.

The ſecond general branch, which is the practical part, as naturally divides into two parts anſwering to the parts of the firſt: that which anſwers to the Harmonica, the ancients called *Melopœia*; becauſe it contains the rules of making ſongs with reſpect to tune and harmony of ſounds; though indeed we have no ground to believe that the ancients had any thing like compoſition in parts. That which anſwers to the Rythmica, they called *Rythmopœia*, containing the rules concerning the application of the numbers and time.

A GENERAL ACCOUNT OF THE METHOD OF WRITING MUSIC.

WHAT this title imports is neceſſary to be well underſtood, and to come to the thing itſelf let us conſider,

It was not enough to have diſcovered ſo much of the nature of ſound, as to make it ſerviceable to our pleaſure, by the various combinations of the degrees of tune, and meaſures of time; it was neceſſary alſo, for enlarging the application, to find a method how to repreſent theſe fleeting and tranſient objects, by ſenſible and permanent ſigns; whereby they are as it were arreſted: and what would otherwiſe be loſt even to the composer, he preſerves for his own uſe, and can communicate it to others at any diſtance; I mean he can direct them how to raiſe the like ideas to themſelves, ſuppoſing they know how to take ſounds in any relation of tune and time directed; for the buſineſs of this art properly is, to repreſent the various degrees and meaſures of tune and time in ſuch a manner, that the connection and ſucceſſion of the notes may be eaſily and readily diſcovered, and the ſkilful practiſer may at ſight find his notes, or, as they ſpeak, read any ſong.

As the two principal parts of muſic are the tune and time of ſounds, ſo the art of writing it is very naturally reduced to two parts correſponding to theſe. The firſt, or the method of repreſenting the degrees of tune, I ſhall explain in this chapter; which will lead me to ſay ſomething in general of the other, a more full and particular account whereof you ſhall have in the next chapter.

We have already ſeen how the degrees of tune or the ſcale of muſic may be expreſſed by ſeven letters repeated as oft as we pleaſe in a different character; but theſe, without ſome other ſigns, do not expreſs the meaſures of time, unleſs we ſuppoſe all the notes of a ſong to be of equal length. Now, ſuppoſing the thing to be made not much more difficult by theſe additional ſigns of time, yet the whole is more happily accompliſhed in the following manner.

If we draw any number of parallel lines, as in plate I. fig. 7. then, from every line to the next ſpace, and from every ſpace to the next line up and down, repreſents a degree of the diatonick ſcale; and conſequently from every line or ſpace to every other at greater diſtance repreſents ſome other degree of the ſcale, according as the immediate degrees from line to ſpace, and from ſpace to line are determined. Now to determine theſe we make uſe of the ſcale expreſt by ſeven letters, as already explained, *viz. c*: *d*; *e*. *f*: *g*; *a*: *b*. *c*— where the tone greater is repreſented by a colon (:) the tone leſſer by a ſemicolon (;) and the ſemitone greater by a (.). If the lines and ſpaces are marked and named by theſe letters, as you ſee in the figure, then according to the relations aſſigned to theſe letters (*i. e.* to the ſounds expreſt by them) the degrees and intervals of ſound expreſt by the diſtances of lines and ſpaces are determined.

As to the extent of the ſcale of muſic, it is infinite if we conſider what is ſimply poſſible, but for practice, it is limited; and in the preſent practice 4 octaves, or at moſt 4 octaves with a 6th, comprehending 34 diatonick notes, is the greateſt extent. There is ſcarcely any one voice to be found that reaches near ſo far, though ſeveral different voices may; nor any one ſingle piece of melody, that comprehends ſo great an interval betwixt its higheſt and loweſt note: yet we muſt conſider not only what melody requires, but what the extent of ſeveral voices and inſtruments is capable of, and what the harmony of ſeveral of them requires; and in this reſpect the whole ſcale is neceſſary, which you have repreſented in the figure directed to; I ſhall therefore call it the univerſal ſyſtem, becauſe it comprehends the whole extent of modern practice.

But the queſtion ſtill remains, how any particular order and ſucceſſion of ſounds is repreſented? And this is done by ſetting certain ſigns and characters one after another, up and down on the lines and ſpaces, according to the intervals and relations of tune to be expreſt; that is, any one letter of the ſcale, or the line or ſpace to which it belongs, being choſen to ſet the firſt note on, all the reſt are ſet up and down according to the mind of the compoſer, upon ſuch lines and ſpaces as are at the deſigned diſtances, *i. e.* which expreſs the deſigned interval according to the number and kind of the intermediate degrees; and mind that the firſt note is taken at any convenient pitch of tune; for the ſcale, or the lines and ſpaces, ſerve only to determine the tune of the reſt with relation to the firſt, leaving us to take that as we pleaſe: for example, if the firſt note is placed on the line *c*, and the next deſigned a tone or 2d *g.* above, it is ſet on the next ſpace above, which is *d*; or if it is deſigned a 3d *g.* it is ſet on the line above which is *e*; or on the ſecond line above, if it was deſigned 5th, as you ſee repreſented in the 2d column of the ſcale in the preceding figure, where I have uſed this character O for a note. And here let me obſerve in general, that theſe characters ſerve not only to direct how to take the notes in their true tune, by the diſtance of the lines and ſpaces on which they are ſet; but by a fit number and variety of them (to be explained in the next chapter) they expreſs the time and meaſure of duration of the notes; whereby it is plain that theſe two things are no way confounded; the relative meaſures of tune being properly determined by the diſtances of lines and ſpaces, and the time by the figure of the note or character.

It is eaſy to obſerve what an advantage there is in this method of lines and ſpaces, even for ſuch muſic as has all its notes of equal length, and therefore needs no other thing but the letters of the ſcale to expreſs it; the memory and imagination are here greatly aſſiſted, for the notes ſtanding upward and downward from each other on the lines and ſpaces, expreſs the riſing and falling of the voice more readily than different characters of letters; and the intervals are alſo more readily perceived.

Obſerve in the next place, that with reſpect to inſtruments of muſic, I ſuppoſe their notes are all named by the letters of the ſcale, having the ſame diſtances as already ſtated in the relations of ſounds expreſt by theſe letters; ſo that knowing how to raiſe a ſeries of ſounds from the loweſt note of any inſtrument by diatonick degrees (which is always firſt learned) and naming them by the letters of the ſcale, it is eaſily conceived how we are directed to play on any inſtrument, by notes ſet upon lines and ſpaces that are named by the ſame letters. It is the buſineſs of the maſters and profeſſors of ſeveral inſtruments to teach the application more expreſly. And as to the human voice, obſerve, the notes thereof, being confined to no order, are called *c* or *d*, &c. only with reſpect to the direction it receives from this method; and that direction is alſo very plain; for having taken the firſt note at any convenient pitch, we are taught by the places of the reſt upon the lines and ſpaces how to tune them in relation to the firſt, and to one another.

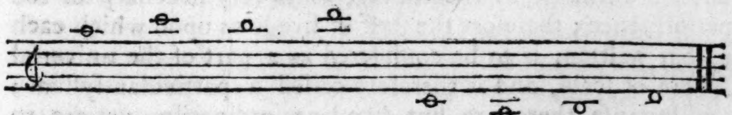
Again, as the artificial notes which divide the tones of the natural ſeries, are expreſt by the ſame letters, with theſe marks, ※, ♭, already explained, ſo they are alſo placed on the ſame lines and ſpaces, on which the natural note named by that letter ſtands; thus *c*※ and *c* belong to the ſame line or ſpace, as alſo *d*※ and *d*. And when the note on any line or ſpace ought to be the artificial one, it is marked ※ or ♭; and where there is no ſuch mark it is always the natural note. Thus if from *a* (natural) we would ſet a 3d *g*, upward, it is *c*※; or a 3d *l.* above *g*, it is *b* flat or ♭. Theſe artificial notes are all determined on inſtruments to certain places or poſitions, with reſpect to the parts of the inſtrument and the hand; and for the voice they are taken according to the diſtance from the laſt note, reckoned by the number of tones and ſemitones that every greater interval contains.

The laſt general obſerve I make here is, that as there are twelve different notes in the ſemitonic ſcale, the writing might be ſo ordered, that from every line a ſpace to the next ſpace or line ſhould expreſs a ſemitone; but it is much better contrived, that theſe ſhould expreſs the degrees of the diatonick ſcale (*i. e.* ſome tones ſome ſemitones) for hereby we can much eaſier diſcover what is the true interval between any two notes, becauſe they are fewer lines and ſpaces interpoſed, and the number of them ſuch as anſwers to the denomination of the intervals; ſo an octave comprehends four lines and four ſpaces; a 5th comprehends three lines and two ſpaces, or three ſpaces and two lines; and ſo of others. I have already ſhewn, how it is better that there ſhould be but ſeven different letters, to name the twelve degrees of the ſemitonic ſcale; but ſuppoſing there were twelve letters, it is plain we ſhould need no more lines to comprehend an octave, becauſe we might aſſign two letters to one line or ſpace, as well as to make it, for example, both *c*⋇ and *c*, whereof the one belongeth to the diatonick ſeries, ſhould mark it for ordinary, and upon occaſions the other be brought in the ſame way we now do the ſigns ⋇ and ♭.

A MORE PARTICULAR ACCOUNT OF THE METHOD; WHERE, OF THE NATURE AND USE OF CLEFS.

THOUGH the ſcale extends to thirty-four diatonick notes, which require ſeventeen lines with their ſpaces, yet becauſe no one ſingle piece of melody comprehends near ſo many notes, whatever ſeveral pieces joined in one harmony comprehend among them; and becauſe every piece or ſingle ſong is directed or written diſtinctly by itſelf; therefore we never draw more than five lines, which comprehend the greateſt number of the notes of any ſingle piece; and for thoſe caſes which require more we draw ſhort lines occaſionally, above or below the 5, to ſerve the notes that go higher or lower.

EXAMPLE.



Again, though every line and ſpace may be marked at the beginning with its letter, as has been done in former times; yet, ſince the art has been improving, only one line is marked, by which all the reſt are eaſily known, if we reckon up or down in the order of the letters; the letter marked is called the clef or key, becauſe by it we know the names of all the other lines and ſpaces, and conſequently the true quantity of every degree and interval. But becauſe every note in the octave is called a key, though in another ſenſe this letter marked is called in a particular manner the ſigned clef, becauſe being written on any line, it not only ſigns or marks that one, but explains all the reſt. And to prevent ambiguity in what follows, by the word Clef I ſhall always mean that letter which, being marked on any line, explains all the reſt, and by the word Key the principal note of any ſong in which the melody cloſes, in the ſenſe explained in the laſt chapter. Of theſe ſigned clefs there are three, viz. *c*, *f*, *g*; and that we may know the improvement in having but one ſigned clef in one particular piece, alſo how and for what purpoſe three different clefs are uſed in different pieces, conſider the following definition.

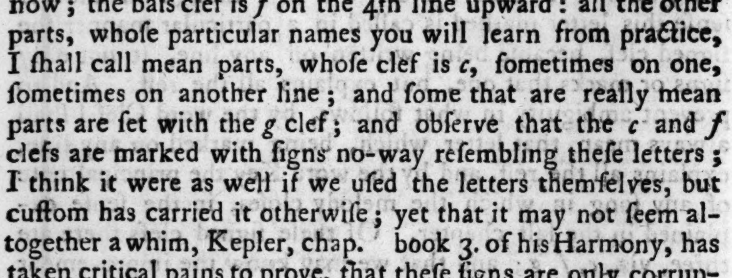
A Song is either ſimple or compound. It is a ſimple ſong, where only one voice performs; or, though there be more, if they are all uniſon or octave, or any other concord in every note, it is ſtill but the ſame piece of melody, performed by different voices in the ſame or different pitches of tune, for the intervals of the notes are the ſame in them all. A compound ſong is where two or more voices go together, with a variety of concords and harmony; ſo that the melody each of them makes is a diſtinct and different ſimple ſong, and all together make the compound. The melody that each of them produces is therefore called a part of the compoſition; and all ſuch compoſitions are very properly called ſymphonetic muſic, or muſic in parts; taking the word muſic here for the compoſition or ſong itſelf.

Now, becauſe in this compoſition the parts muſt be ſome of them higher and ſome lower (which are generally ſo ordered that the ſame part is always higheſt or loweſt, though in modern compoſitions they do frequently change) and all written diſtinctly by themſelves, as is very neceſſary for the performance; therefore the ſtaff of five lines upon which each part is written, is to be conſidered as a part of the univerſal ſyſtem or ſcale, and is therefore called a particular ſyſtem; and becauſe there are but five lines ordinarily, we are to ſuppoſe as many above and below as may be required for any ſingle part; which are actually drawn in the particular places where they are neceſſary.

The higheſt part is called the treble, or alt, whoſe clef is *g*, ſet on the 2d line of the particular ſyſtem, counting upward: the loweſt is called the baſs, i. e. baſis, becauſe it is the foundation of the harmony, and formerly in their plain compoſitions the baſs was firſt made, though it is otherwiſe now; the baſs clef is *f* on the 4th line upward: all the other parts, whoſe particular names you will learn from practice, I ſhall call mean parts, whoſe clef is *c*, ſometimes on one, ſometimes on another line; and ſome that are really mean parts are ſet with the *g* clef; and obſerve that the *c* and *f* clefs are marked with ſigns no-way reſembling theſe letters; I think it were as well if we uſed the letters themſelves, but cuſtom has carried it otherwiſe; yet that it may not ſeem altogether a whim, Kepler, chap. book 3. of his Harmony, has taken critical pains to prove, that theſe ſigns are only corruptions of the letters they repreſent; the curious may conſult him.

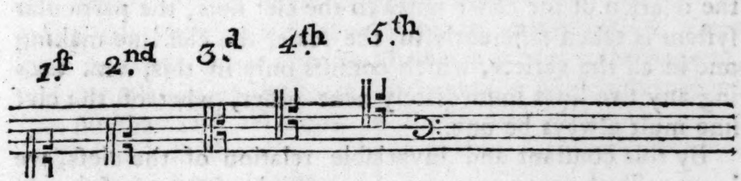
We are next to conſider the relations of theſe clefs to one another; that we may know where each part lies in the ſcale or general ſyſtem, and the natural relation of the parts among themſelves, which is the true deſign and office of the clefs. Now they are taken 5ths to one another, that is, the clef *f* is loweſt, *c* is a 5th above it, and *g* a 5th above *c*.

EXAMPLE. or thus



Obſerve, that though in the particular ſyſtems, the treble or *g* clef is ordinarily ſet on the 2d line, the baſs or *f* clef on the 4th line, and the mean or *c* clef on the 3d line (eſpecially when there are but three parts) yet they are to be found on other lines; as particularly the mean clef, which moſt frequently changes place (becauſe there are many mean parts) is ſometimes on the 1ſt, 2d, 3d, 4th, and 5th lines; but on their removal have different names.

EXAMPLE.



1ſt Soprano: 2d Mozzo Soprano: 3d Contra Tenor: 4th Tenor: 5th Tenor Baſs.— The perſon who ſings from this laſt named cliff may prove his notes either from the mean on the 5th line, or baſs on the 3d; but on whatever line in the ſeparate particular ſyſtem any clef is ſigned, it muſt be underſtood to belong to the ſame place of the general ſyſtem, and to be the ſame individual note or ſound on the inſtrument which is directed by that clef; ſo that to know what part of the ſcale any particular ſyſtem is, we muſt take its clef where it ſtands ſigned in the ſcale, and take as many lines above and below it, as there are in the particular ſyſtem; or thus, we muſt apply the particular ſyſtem to the ſcale, ſo as the clef lines coincide, and then we ſhall ſee with what lines of the ſcale the other lines of the particular ſyſtem coincide: For example, if we find the clef on the 3d line upward in a particular ſyſtem; to find the coincident five lines to which it refers in the ſcale, we take with the *f* clef line, two lines above and two below. Again, if we have the *c* clef on the 4th line, we are to take in the ſcale with the clef line, one line above and three below, and ſo of others; ſo that according to the different places of the clef in a particular ſyſtem, the lines in the ſcale correſpondent to that ſyſtem may be all different, except the clef line which is invariable: and that you may with eaſe find in the ſcale the five lines coincident with every particular ſyſtem, upon whatever line of the five the clef may be ſet.

As to the reaſon of changing the relative place of the clef, i. e. its place in the particular ſyſtem, it is only to make this comprehend as many notes of the ſong as poſſible, and by that means to have fewer lines above or below it; ſo if there are many notes above the clef note and few below it, this purpoſe is anſwered by placing the clef in the firſt or ſecond line; but if the ſong goes more below the clef, then it is beſt placed higher in the ſyſtem: in ſhort, according to the relation of the other notes to the clef note, the particular ſyſtem is taken differently in the ſcale, the clef line making one in all the variety, which conſiſts only in this, viz. taking any five lines immediately next other, whereof the clef line muſt always be one.

By this conſtant and invariable relation of the clefs, we learn eaſily how to compare the particular ſyſtems of ſeveral parts, and know how they communicate in the ſcale, i. e. which lines are uniſon, and which are different, and how far, and conſequently what notes of the ſeveral parts are uniſon, and what not: For you are not to ſuppoſe that each part has a certain bounds within which another muſt never come; no, ſome notes of the treble, for example, may be lower than ſome of the mean parts, or even of the baſs; and that not only when we compare ſuch notes as are not heard together, but even ſuch as are. And if we would put together in one ſyſtem, all the parts of any compoſition that are written ſeparately. The rule is plainly this, viz. place the notes of each part at the ſame diſtances above and below the proper clef, as they ſtand in the ſeparate ſyſtem. And becauſe all the notes that are conſonant (or heard together) ought to ſtand, in this deſign, perpendicularly over each other, therefore that the notes belonging to each part may be diſtinctly known, they may be made with ſuch differences as ſhall not confuſe or alter their ſignifications with reſpect to time, and only ſignify that they belong to ſuch a part; by this means we ſhall ſee how all the parts change and paſs thro' one another, i. e. which of them, in every note, is higheſt or loweſt or uniſon; for they do ſometimes change, tho' more generally the treble is higheſt and the Baſs loweſt, the change happening more ordinarily betwixt the mean parts among themſelves, or theſe with the treble or baſs: The treble and baſs clefs are diſtant an octave and tone, and their parts do ſeldom interfere, the treble moving more above the clef note, and the baſs below.

We ſee plainly then, that the uſe of particular ſigned clefs is an improvement with reſpect to the parts of any compoſition; for unleſs ſome one key in the particular ſyſtems were diſtinguiſhed from the reſt, and referred invariably and conſtantly to one place in the ſcale, the relations of the parts could not be diſtinctly marked; and that more than one is neceſſary, is plain from the diſtance there muſt be among the parts: Or if one letter is choſen for all, there muſt be ſome other ſign to ſhew what part it belongs to, and the relation of the parts. Experience having approved the number and relations of the ſigned clefs which are explained, I ſhall add no more as to that, but there are other things to be here obſerved.

The chooſing theſe letters *f* . *c* . *g* for ſigned clefs, is a thing altogether arbitrary; for any other letter within the ſyſtem, will explain the reſt as well; yet 'tis fit there be a conſtant rule, that the ſeveral parts may be right diſtinguiſhed; and concerning this obſerve again, that for the performance of any ſingle piece the clef ſerves only for explaining the invervals among the lines and ſpaces, ſo that we need not mind what part of any greater ſyſtem it is, and we may take the firſt note as high or low as we pleaſe: For as the proper uſe of the ſcale is not to limit the abſolute degree of tone, ſo the proper uſe of the ſigned clef is not to limit the pitch, at which the firſt note of any part is to be taken, but to determine the tune of the reſt with relation to the firſt, and, conſidering all the parts together, to determine the relations of their ſeveral notes, by the relations of their clefs in the ſcale: And ſo the pitch of tune being determined in a certain note of one part, the other notes of that part are determined, by the conſtant relations of the letters of the ſcale; and alſo the notes of the other parts, by the relations of their clefs. To ſpeak particularly of the way of tuning the inſtruments that are employed in executing the ſeveral parts, is out of my way; I ſhall only ſay this, that they are to be ſo tuned as the clef notes, wherever they lie on the inſtruments which ſerve each part, be in the forementioned relations to one another.

As the harpſichord or organ (or any other of the kind) is the moſt extenſive inſtrument, we may be helped by it to form a clearer idea of theſe things: For conſider, a harpſichord contains in itſelf all the parts of muſic, I mean the whole ſcale or ſyſtem of the modern practice; the foremoſt range of keys contains the diatonic ſeries beginning, in the largeſt kind, in *g*, and extending to *c* above the fourth 8ve; which therefore we may well ſuppoſe repreſented by the preceeding ſcale. In practice, upon that inſtrument, the clef notes are taken in the places repreſented in the ſcheme; and other inſtruments are ſo tuned, that, conſidering the parts they perform, all their notes of the ſame name are uniſon to thoſe of the harpſichord that belong to the ſame part. I have ſaid, the harpſichord contains all the parts of muſic; and indeed any two diſtinct parts may be performed upon it at the ſame time and no more; yet upon two or more harpſichords tuned uniſons, whereby they are in effect but one, any number of parts may be executed: And in this caſe we ſhould ſee the ſeveral parts taken in their proper places of the inſtrument, according to the relations of their clefs explained: And as to the tuning the inſtrument, I ſhall only add, that there is a certain pitch to which it is brought, that it may be neither too high nor too low, for the accompaniment of other inſtruments, and eſpecially for the human voice, whether in uniſon or taking a different part; and this is called the Conſort Pitch. To have done, you muſt conſider, that for performing any one ſingle part, we may take the clef note in any 8ve, i. e. at any note of the ſame name, providing we go not too high or too low for finding the reſt of the notes of the ſong: But in a conſort of ſeveral parts, all the clefs muſt be taken, not only in the relations, but alſo in the places of the ſyſtem already mentioned, that every part may be comprehended in it: Yet ſtill you are to mind, that the tune of the whole, or the abſolute pitch, is in it ſelf an arbitrary thing, quite foreign to the uſe of the ſcale; tho' there is a certain pitch generally agreed upon, that differs not very much in the practice of any one nation or ſet of muſicians from another. And therefore,

When I ſpeak of the place of the clefs in the ſcale or general ſyſtem, you muſt underſtand it with reſpeſt to a ſcale of a certain determined extent; for this being undetermined, ed, ſo muſt the places of the clefs be: And for any ſcale of a certain extent, the rule is, that the mean clef c be taken as near the middle of the ſcale as poſſible, and then the clef *g* a 5th above, and *f* a 5th below, as it is in the preſent general ſyſtem of four 8ves and a 6th, repreſented in the ſcheme, and actually determined upon harpſichords.

In the laſt place conſider, that ſince the lines and ſpaces of the ſcale, with the degrees ſtated among them by the letters, ſufficiently determine how far any note is diſtant from another, therefore there is no need of different characters of letters, as would be if the ſcale were only expreſt by theſe letters: And when we ſpeak of any note of the ſcale, naming it by *a* or *b*, &c. we may explain what part of the ſcale it is in, either by numbring the 8ves from the loweſt note, and calling the note ſpoken of (for example) *c* in the loweſt 8ve or in the 2d 8ve, and ſo on: Or, we may determine its place by a reference to the ſeat of any of the three ſigned clefs; and ſo we may ſay of any note, as *f* or *g*, that it is ſuch a clef note, or the firſt or ſecond, &c. *f* or *g* above ſuch a clef. Take this application, ſuppoſe you aſk me what is the higheſt note of my voice? If I ſay *d*, you are not the wiſer by this anſwer, till I determine it by ſaying it is *d* in the fourth octave, or the firſt *d* above the treble clef. But again, neither this queſtion nor the anſwer is ſufficiently determined, unleſs it have a reference to ſome ſuppoſed pitch of tune in a certain fixt inſtrument, as the ordinary Conſort Pitch of a harpſichord, becauſe, as I have frequently ſaid, the ſcale of muſic is concerned only with the relation of notes and the order of degrees, which are ſtill the ſame in all differences of tune, in the whole ſeries.

Of the REASON, USE, and variety of the SIGNATURES of CLEFS.

I Have already ſaid, that the natural and artificial Note expreſſed by the ſame letter, as *c* and *c*※, are both ſet on the ſame line or ſpace. When there is no ※ or ♭ marked on any line or ſpace, at the beginning with the clef, then all the notes are natural; and if in any particular place of the ſong, the artificial note is required, 'tis ſignified by the ſign ※ or ♭, ſet upon the line a ſpace before that note; but if a

✱ or b is ſet at the beginning in any line or ſpace with the clef, then all the notes on that line or ſpace are the artiſicial ones, that is, are to be taken a ſemitone higher or lower than they would be without ſuch a ſign; the ſame affects all their 8ves above or below, tho' they are not marked ſo. And in the courſe of the ſong, if the natural note is ſometimes required, it is ſignified by this mark ♮. And the marking the ſyſtem at the beginning with ſharps or flats, I call the ſignature of the clef.

In what's ſaid, you have the plain rule for application; but that we may better conceive the reaſon and uſe of theſe ſignatures, it will be neceſſary to recollect, and alſo make a little clearer, what has been explained of the nature of keys or modes, and of the original and uſe of the ſharp and flat notes, I ſhall explain what a key and mode in muſic is; and diſtinguiſh betwixt theſe two, and ſhew that there are and can be but two different modes, the greater and the leſſer, according to the two concinnous diviſions of the 8ve, viz. by the 3d *g.* or the 3d *l.* and their proper accompaniments; and whatever difference you may make in the abſolute pitch of the whole notes, or of the firſt note which limit all the reſt, the ſame individual ſong muſt ſtill be in the ſame mode; and by the key I underſtand only that pitch or degree of tune at which the fundamental or cloſe note of the melody, and conſequently the whole 8ve is taken; and becauſe the fundamental is the principal note of the 8ve which regulates the reſt, it is peculiarly called the key. Now as to the variety of keys, if we take the thing in ſo large a ſenſe as to ſignify the abſolute pitch of tune at which any fundamental note may be taken, the number is at leaſt indefinite; but in practice it is limited, and particularly with reſpect to the denominations of keys, which are only twelve, viz. the twelve different names or letters of the ſemitonic ſcale; ſo we ſay the key of a ſong is *c* or *d*, &c. which ſignifies that the cadence or cloſe of the melody is upon the note of that name when we ſpeak of any inſtrument; and with reſpect to the human voice, that the cloſe note is uniſon to ſuch a note on an inſtrument; and generally, with reſpect both to inſtruments and voice, the denomination of the key is taken from the place of the cloſe note upon the written muſic, i. e. the name of the line or ſpace where it ſtands: Hence we ſee, that tho' the difference of keys refers to the degree of tune, at which the fundamental, and conſequently the whole

8ve is taken, in diſtinction from the mode or conſtitution of an octave, yet theſe denominations determine the differences only relatively, with reſpect to one certain ſeries of fixed ſounds, as a ſcale of notes upon a particular inſtrument, in which all the notes of different names are different keys, according to the general definition, becauſe of their different degrees of tune; but as the tuning of the whole may be in a different pitch, and the notes taken in the ſame part of the inſtrument, are, without reſpect to the tuning of the whole, ſtill called by the ſame name *c* or *d*, &c. becauſe they ſerve only to mark the relation of tune betwixt the notes, therefore 'tis plain, that in practice a ſong will be ſaid to be in the ſame key as to the denomination, though the abſolute tune be different, and to be in different keys when the abſolute tune is the ſame; as if the note *a* is made the key in one tuning, and in another the note *d* uniſon to *a* of the former. Now, this is a kind of limitation of the general definition, yet it ſerves the deſign beſt for practice, and indeed cannot be otherwiſe without infinite confuſion. I ſhall a little below make ſome more particular remarks upon the denominations of ſounds, or notes raiſed from inſtruments or the human voice: but from what has been explained, you will eaſily underſtand what difference I put betwixt a mode and a key; of modes there are only two, and they reſpect what I would call the internal conſtitution of the 8ve; but keys are indefinite in the more general and abſtract ſenſe; and with regard to their denominations in practice they are reduced to twelve, and have reſpect to a circumſtance that is external and accidental to the mode; and therefore a key may be changed under the ſame mode, as when the ſame ſong, which is always in the ſame mode, is taken up at different notes or degrees of tune; and from the ſame fundamental or key a ſeries may proceed in a different mode, as when different ſongs begin in the ſame note. But then becauſe common uſe applies the word key in both ſenſes, i. e. both to what I call a key and a mode, to prevent ambiguity the word ſharp or flat ought to be added when we would expreſs the mode; ſo that a ſharp key is the ſame as the greater mode, and a flat key a leſſer mode; and when we would expreſs both mode and key, we join the name of the key note, thus, we may ſay ſuch a ſong is for example in the ſharp or flat key *c*, to ſignify that the fundamental note in which the cloſe is made is the note called *c* on the inſtrument, or uniſon to it in the voice; or generally, that it is ſet on the line or ſpace of that name in writing; and that the 3d *g*, or 3d *l*, is uſed in the melody, while the ſong keeps within that key; for I have alſo obſerved, that the ſame ſong may be carried through different keys, or make ſucceſſive cadences in different notes, which is commonly ordered by bringing in ſome note that is none of the natural notes of the former key, of which more immediately: But when we hear of any key denominated *c* or *d* without the word ſharp or flat, then we can underſtand nothing but what I have called the key in diſtinction from the mode, i. e. that the cadence is made in ſuch a note, ÷|÷.

Again, I ſhall explain the uſe of the notes we call ſharp and flat, or artificial notes, and the diſtinction of keys in that reſpect into natural and artificial, and ſhew that they are neceſſary for correcting the defects of inſtruments having fixt ſounds, that beginning at any note we may have a true concinnous diatonick ſeries from that note, which in a ſcale of fixt degrees in the 8ve we cannot have, all the orders of degrees proceeding from each of the ſeven natural notes being different, of which only two are concinnous, viz. from *c* which makes a ſharp key, and from *a* which makes a flat key; and to apply this more particularly, you muſt underſtand the uſe of theſe ſharp or flat notes to be this, that a ſong, which, being ſet in a natural key, or without ſharps and flats, is either too high or too low, may be tranſpoſed or ſet in another more convenient key, which neceſſarily brings in ſome of the artificial notes, in order to make a diatonick ſeries from this new key, like that from the other; and when the ſong changes the key before it comes to the final cloſe, though the principal be natural, yet ſome of theſe into which it changes may require artificial notes, which are the eſſential and natural notes of this new key; for though this be called an artificial key, it is only ſo with reſpect to the names of the notes in the fixt ſyſtem, which are ſtill natural with reſpect to their proper fundamental, viz. the key into which the piece is tranſpoſed, or into which it changes where the principal key is natural.

And even with reſpect to the human voice, which is under no limitation, I have ſhewn the neceſſity of theſe names, for the ſake of a regular, diſtinct and eaſy repreſentation of ſounds, for directing the voice in performance. I ſhall next more particularly explain by ſome examples, the buſineſs of keeping in and going out of keys. Example. Suppoſe a ſong begins in *c*, or at leaſt makes the firſt cloſe in it; if all the notes preceding that cloſe are in true muſical relation to *c* as a fundamental in one ſpecies, ſuppoſe as a ſharp key, i. e. with a 3d *g*, the melody has been ſtill in that key. But if proceeding, the compoſer brings in the note *f* ✳, he leads the melody out of the former key, becauſe *f* ✳ is none of the natural notes of the 8ve *c*, being a falſe 4th to *c*. Again he may lead it out of the key without any falſe note, by bringing in one that belongs not to the ſpecies in which the melody was begun. Suppoſe after beginning in the ſharp key *c*, he introduces the note *g* ✳, which is a flat 6th, or an extreme ſharp 5th to *c*, and therefore harmonious, yet it belongs to it as a flat key, and conſequently is out of the key as a ſharp one. And becauſe the ſame ſong cannot with any good effect be made to cloſe twice in the ſame note in a different ſpecies, therefore after introducing the note *g* ✳, the next cloſe muſt be in ſome other note as *a*, and then the key in both ſenſes will be changed, becauſe *a* has naturally a 3d ♭; and therefore when any note is ſaid to be out of a key, it is underſtood to be out of it either as making a falſe interval, or as belonging to it in another ſpecies than a ſuppoſed one, i. e. if it belong to it as a ſharp key, it is out of it as a flat one; the firſt cloſe is in *a* as a ſharp key, all the preceding notes being natural to it as ſuch; then proceeding in the ſame key, you ſee *g* (natural) introduced, which belongs not to *a* as a ſharp key, and alſo *a* ✳, which is quite out of the former key. By theſe notes a cloſe is brought on in ♭, and the melody is ſaid to be out of the firſt key, and is ſo in both ſenſes of the word key; then the melody is carried on to a cloſe in *d*, which is a third key, and with reſpect to that piece is indeed the principal key, in which alſo the piece begins; but I ſhall conſider this again; it was enough to my purpoſe here, that all the notes from the beginning to the firſt cloſe in *a* were natural to the octave from *a* with a 3d; and tho' the 3d above the cloſe is not uſed, yet the 6th below it is uſed; which is the ſame thing in determining the ſpecies.

I return now to explain the reaſon and uſe of the ſignatures of clefs. And firſt, Let us ſuppoſe any piece of melody confined ſtrictly to one mode or key, and let that be the natural ſharp key *c*, from which as the relation of the letters are determined in the ſcale, there is a true muſical ſeries and gradation of notes, and therefore it requires no ✳ or ♭, conſequently the ſignature of the clef muſt be plain. But let the piece be tranſpoſed to the key *d*, it muſt neceſſarily take *f* ✳

inſtead of *f*, and *c* ✳ for *c*, becauſe *f* ✳ is the true 3d, and *c* ✳ the true 7th to *d*. Now if the clef be not ſigned with a ✳ on the ſeat of *f* and *c*, we muſt ſupply it wherever theſe notes occur through the piece; but it is much better that they ſhould be marked once for all at the beginning.

Again, ſuppoſe a piece of melody, in which there is a change of the key or mode; if the ſame ſignature anſwer all theſe keys, there is no more queſtion about it; but if that cannot be, then the ſignature ought to be adjuſted to the principal key, rather than to any other; it demands *f* ✳ and *c* ✳ for its 3d and 7th, therefore the ſignature expreſſeth them. The piece actually begins in the principal key, though the firſt cloſe is made in the 5th above, viz. in *a*, by bringing in *g*✳; which is very naturally managed, becauſe all the notes from the beginning to that cloſe belong to both the ſharp keys *d* and *a*, except that *g* ✳ which is the only note in which they can differ: then you ſee the melody proceeds for ſome time in notes that are common to both theſe keys, though indeed the impreſſion of the laſt cadence will be ſtrongeſt; and then by bringing *g* (natural) and *a* ✳, it leaves both the former keys to cloſe in *b*; and here again there is as great a coincidence with the principal key as poſſible, for the flat key *b* has every one of its eſſential notes common with ſome one of theſe of the ſharp key *d*, except *a* ✳ and *g* ✳ which that flat key may occaſionally make uſe of.

To proceed with our ſignatures, you have, in what is ſaid the true uſe and reaſon of the ſignatures of clefs; in reſpect of which they are diſtinguiſhed into natural, and artificial or tranſpoſed clefs; the firſt is when no ✳ or ♭ is ſet at the beginning; and when there are, it is ſaid to be tranſpoſed. We ſhall next conſider the variety of ſignatures of clefs, which in all are about twelve, and the moſt reaſonable way of making the artificial notes, either in the general ſignature, or where they occur upon the change of the key.

In the ſemitonic ſcale there are twelve different notes in an octave (for the 13th is the ſame with the 1ſt) each of which may be made the fundamental or key of a ſong, i. e. from each of them we can take a ſeries of notes, that ſhall proceed concinnouſly by ſeven diatonick degrees of tones and ſemitones to an octave, in the ſpecies either of a ſharp or flat key, or of a greater or leſſer mode (the ſmall errors of this ſcale as it is fixt upon inſtruments, being in all this matter neglected.) Now, making each of theſe twelve letters or notes a fundamental or key-note, there muſt be in the compaſs of an octave from each, more or fewer, or different ſharps and flats neceſſarily taken in to make a concinnous ſeries of the ſame ſpecies, i. e. proceeding by the greater or leſſer 3d (for theſe ſpecify the mode, and determine the other differences); and ſince from every one of the twelve keys we may proceed concinnouſly, either with a greater or leſſer 3d, and their accompanyments, it appears at firſt ſight, that there muſt be twenty-four different ſignatures of clefs, but you will eaſily underſtand that there are but twelve; for the ſame ſignature ſerves two different keys, whereof the one is a ſharp and the other a flat key, as you ſee plainly in the nature of the diatonick ſcale, in which the octave from *c* proceeds concinnouſly by a 3d, and that from *a* (which is a 6th above, or a 3d below *c*) by a 3d with the 6th and 7th for its accompanyments, which I ſuppoſe here eſſential to all flat keys; conſequently, if we begin at any other letter, and by the uſe of ✳ or ♭ make a concinnous diatonick ſeries of either kind, we ſhall have in the ſame ſeries, continued from the 6th above or 3d below, an octave of the other ſpecies; therefore there can be but twelve different ſignatures of clefs, whereof one is plain or natural, and eleven tranſpoſed or artificial.

What the proper notes of theſe tranſpoſed clefs are, you may find thus; let the ſcale of ſemitones be continued to two octaves, then begin at every letter, and, reckoning two ſemitones to every tone, take two tones and one ſemitone, then three tones and one ſemitone, which is the order of a ſharp key, or of the natural octave from *c*, the letters which terminate theſe tones and ſemitones, are the eſſential or natural notes of the key or octave, whoſe fundamental is the letter or note you begin at. By this you will find the notes belonging to every ſharp key; and theſe being continued, you will alſo have the notes belonging to every flat key, by taking the 6th above the ſharp key for the fundamental of the flat.

With reſpect to the names and ſignatures, there remain ſome things to be explained. I have told you that upon the main it was an indifferent thing, whether the artificial notes in the ſcale were named from the note below with a ✳, or from that above with a ♭. You have each of them marked, in ſome ſignatures ✳, and in others ♭; but in every particular ſignature the marks are all of one kind, ✳ or ♭, though one ſignature is ✳, and another ♭; and theſe are not ſo ordered at random; the reaſon I ſhall explain to you. In the firſt place there is a greater harmony with reſpect to the eye; but this is a ſmall matter, a better reaſon follows. Conſider, every letter has two powers, i. e. is capable of repreſenting two notes, according as you take it natural or plain, as *c*, *d*, &c. or tranſpoſed as *c* ✳ or *d* ♭; again, every line and ſpace is the ſeat of one particular letter. Now if we take two powers of one letter in the ſame octave or key, the line or ſpace to which it belongs muſt have two different ſigns; and then when a note is ſet upon that line or ſpace, how ſhall it be known whether it is to be taken natural or tranſpoſed? This can only be done by ſetting the proper ſigns at every ſuch note; which is not only troubleſome, but renders the general ſignature uſeleſs as to that line or ſpace. This is the reaſon why ſome ſignatures are made ✳ rather than ♭, and contrarily; for example, take for the fundamental *c* ✳, the reſt of the notes to make a ſharp key are *d* ✳, *f*: *f* ✳, *g* ✳, *a* ✳, *c*, where you ſee *f* and *c* are taken both natural and tranſpoſed, which we avoid by making all the artificial note ♭; thus *d* ♭, *e* ♭, *f*: *g* ♭, *a* ♭, b, *c*, *d* ♭. 'Tis true that this might be helped another way, viz. by taking all the notes ✳, i. e. taking *e* ✳ for *f*, and *b* ✳ for *c*; but the inconveniency of this is viſible, for hereby we force two natural notes out of their places, whereby the difficulty of performing by ſuch direction is increaſed. In the other caſes where I have marked all ♭ rather than ✳, the ſame reaſons obtain. And in ſome caſes, ſome ways of ſigning with a ✳ would have both theſe inconveniencies. The ſame reaſons make it neceſſary to have ſome ſignature ✳ rather than ♭; but the octave beginning in *g* ♭ is ſingular in this reſpect, that it is equal which way it is ſigned, for in both there will be one natural note diſplaced unavoidably; *b* natural is ſigned *c* ♭, and if you make all the ſigns ✳, you muſt either take in two powers of one letter, or take *e* ✳ for *f*. Now neither in this, nor any of the other caſes will the mixing of the ſigns remove the inconveniencies; and ſuppoſe it could, another follows upon the mixture, which leads me to ſhew why the ſame clef is either all ✳ or all ♭, the reaſon follows.

The quantity of an interval expreſt by notes ſet upon lines and ſpaces marked ſome ✳, ſome ♭, will not be ſo eaſily diſcovered, as when they are all marked one way, becauſe the number of intermediate degrees from line to ſpace, and from ſpace to line, anſwers not to the denomination of the interval; for example, if it is a 5th, I ſhall more readily diſcover it when there are five intermediate degrees from line to ſpace, than if there were but four; thus, from *g* ſharp to *d* ſharp is a 5th, and will appear as ſuch by the degrees, among the lines and ſpaces; but if we mark it *g* ſharp, *e* ♭, it will have the appearance of a 4th; alſo from *f* ſharp to *a* ſharp is a 3d, and appears ſo, whereas from *f* ſharp to ♭ looks like a 4th; and for that reaſon Mr. Simpſon in his Compendium of Muſic calls it a leſſer 4th, which I think he had better called it an apparent 4th; and ſo by making the ſigns of the cliff all of one kind, this inconveniency is ſaved with reſpect to all intervals, whoſe both extremes have a tranſpoſed letter; and as to ſuch intervals which have one extreme a natural note, or expreſt by a plain letter, and the other tranſpoſed, the inconveniency is prevented by the choice of the * in ſome keys, and of the ♭ in others; for example, from *d* to *f* ſharp is a 3d, equal to that from *d* to *g* ♭, but the firſt only appears like a 3d, the latter a 4th, and ſo of other intervals from *d*. Again from *f* to *b* ♭, or *f* to *a* ſharp is a 4th, but the firſt is the beſt way of marking it; there are no more tranſpoſed notes in that octave, nor any other octave, whoſe fundamental is a natural note, that is marked with ♭.

It muſt be owned, after all, that whatever way we chuſe the ſigns of tranſpoſed notes, the ſounds or notes themſelves on an inſtrument are individually the ſame; and marking them one way rather than another, reſpects only the conveniencies of repreſenting them to the eye, which ought not to be neglected; eſpecially for the direction of the human voice, becauſe that having no fixt ſounds (as an inſtrument has, whoſe notes may be found by a local memory of their ſeat on the inſtrument) we have not another way of finding the true note but computing the interval by the intermediate diatonic degrees, and the more readily this can be done, it is certainly the better.

Now you are to obſerve, that, as the ſignature of the clef is deſigned for, and can ſerve but one key, which ought rather to be the principal key or octave of the piece than any other, ſhewing what tranſpoſed notes belong to it, ſo the inconveniency laſt mentioned is remedied, by having the ſigns all of one kind, only for theſe intervals one of whoſe extremes is the key-note, or letter. But a ſong may modulate or change from the principal into other keys, which may require other notes than the ſignature of the clef affords; ſo we find ſharp and ♭ upon ſome particular notes contrary to the clef, which ſhews that themelody is out of the principal key, ſuch notes being natural to ſome other ſubprincipal key into which it is carried; and theſe ſigns are, or ought always to be choſen in the moſt convenient manner for expreſſing the interval; for example, the principal key being *c* with a 3d greater, which is a natural octave (i. e. expreſſed all with plain letters) ſuppoſe a change into its 4th *f*; and here let a 4th upward be required, we muſt take it in b or *a* ſharp; the firſt is the beſt way, but either of them contradicts the cliff which is natural; and we no ſooner find this than we judge the key is changed. But again, a change may be where this ſign of it cannot appear, viz. when we modulate into the 6th of a ſharp principal key, or into the 3d of a flat principal key, becauſe theſe have the ſame ſignature, as has been already ſhewn, and have ſuch a connection, that, unleſs by a cadence, the melody can never be ſaid to be out of the principal key. And with reſpect to a flat principal key, obſerve, that if the 6th *g.* and 7th *g.* are uſed, as in ſome circumſtances they may, eſpecially towards a cadence, then there will be neceſſarily required upon that 6th and 7th, another ſign than that with which its ſeat is marked in the general ſignature of the cliff, which marks all flat keys with the leſſer 6ths and 7ths; and therefore in ſuch caſe (i. e. where the principal key is flat) this difference from the clef is not a ſign that the melody leaves the key, becauſe each of theſe belong to it in different circumſtances; yet they cannot be both marked in the clef, therefore that which is of more general uſe is put there, and the other marked occaſionally.

From what has been explained, you learn another very remarkable thing, viz. to know what the principal key of any piece is, without ſeeing one note of it; and this is done by knowing the ſignature of the clef. There are but two kinds of keys (or modes of melody) diſtinguiſhed into ſharp and flat, as already explained; each of which may have any of the 12 different notes or letters of the ſemitonic ſcale for its fundamental; in the 1ſt and 6th line of the upper part of the preceding table you have all theſe fundamentals or key-notes, and under them reſpectively ſtand the ſignatures proper to each, in which, as has been often ſaid, the flat keys have their 6th and 7th marked of the leſſer kind; and therefore as by the key, or fundamental note, we know the ſignature, ſo reciprocally by the ſignature we can know the key; but 'tis under this one limitation that, becauſe one ſignature ſerves two keys, a ſharp one, and a flat, which is the 6th above or 3d below the ſharp one, therefore we only learn by this, that it is one of them, but not which; for example, if the clef has no tranſpoſed note but *f* ✱, then the key is *g* with a 3d greater, or *e* with a 3d leſſer. If the clef has ♭ and *e* ♭, the key is ♭ with a 3d greater, or *g* with a 3d leſſer, and ſo of others, as in the table: I know indeed, for I have found it ſo in the writings of the beſt maſters, that they are not ſtrict and conſtant in obſerving this rule concerning the ſignature of the clef, eſpecially when the principal key is a flat one; in which caſe you'll find frequently, that when the 6th leſſer or 7th leſſer to the key, or both, are tranſpoſed notes, they don't ſign them ſo in the clef, but leave them to be marked as the courſe of the melody requires; which is convenient enough when the piece is ſo conducted as to uſe the leſſer 6th and 7th ſeldomer than the greater.

Of the NAME, with the various DEFINITIONS and DIVISIONS of the SCIENCE.

THE word Muſic comes to us from the Latin word Muſica, if not immediately from a Greek word of the ſame ſound, from whence the Romans probably took theirs; for they got much of their learning from the Greeks. Our criticks teach us, that it comes from the word Muſa, and this from a Greek word which ſignifies to ſearch or find out, becauſe the Muſes were feigned to be inventreſſes of the ſciences, and particularly of poetry and thoſe modulations of ſound that conſtitute muſic. But others go higher, and tell us, the word Muſa comes from a Hebrew word, which ſignifies art or diſcipline; hence Muſa and Muſica antiently ſignified learning in general, or any kind of ſcience; in which ſenſe you'll find it frequently in the works of the ancient philoſophers. But Kircher will have it from an Egyptian word; becauſe the reſtoration of it after the flood was probably there, by reaſon of the many reeds to be found in their fens, and upon the banks of the Nile. Heſychius tells us, that the Athenians gave the name of muſic to every art. From this it was that the Poets and Mythologiſts feigned the nine Muſes daughters of Jupiter, who invented the ſciences, and preſided over them, to aſſiſt and inſpire thoſe who apply to ſtudy them, each having her particular province. In this general ſenſe we have it defin'd to be the orderly arangement and right diſpoſition of things; in ſhort, the agreement and harmony of the whole with its parts, and of the parts among themſelves. Hermes Triſmegiſtus ſays, That muſic is nothing but the knowledge of the order of all things; which was alſo the doctrine of the Pythagorean ſchool, and of the Platonicks, who teach that every thing in the univerſe is muſic. Agreeable to this wide ſenſe, ſome have diſtinguiſhed muſic into divine and mundane; the firſt reſpects the order and harmony that obtains among the celeſtial minds; the other reſpects the relations and order of every thing elſe in the univerſe. But Plato by the divine muſic underſtands, that which exiſts in the divine mind, viz. theſe archetypal ideas of order and ſymmetry, according to which God formed all things; and as this order exiſts in the creatures, it is called mundane muſic: Which is again ſubdivided, the remarkable denominations of which are, Firſt, Elementary or the harmony of the firſt elements of things; and theſe, according to the philoſophers, are fire, air, water, and earth, which tho' ſeemingly contrary to one another, are, by the wiſdom of the Creator, united and compounded in all the beautiful and regular forms of things that fall under our ſenſes. 2d. Celeſtial, comprehending the order and proportions in the magnitudes, diſtances, and motions of the heavenly bodies, and the harmony of the ſounds proceeding from theſe motions: For the Pythagoreans affirmed that they produce the moſt perfect conſort; the argument, as Macrobius in his commentary on Cicero's Somnium Scipionis has it, is to this purpoſe, viz. Sound is the effect of motion, and ſince the heavenly bodies muſt be under certain regular and ſtated laws of motion, they muſt produce ſomething muſical and concordant; for from random and fortuitous motions, governed by no certain meaſure, can only proceed a grating and unpleaſant noiſe: And the reaſon, ſays he, why we are not ſenſible of that ſound, is the vaſtneſs of it, which exceeds our ſenſe of hearing; in the ſame manner as the inhabitants near the cataracts of the Nile are inſenſible of their prodigious noiſe. But ſome of the hiſtorians, if I remember right, tell us that by the exceſſiveneſs of the ſounds, theſe people are rendered quite deaf, which makes that demonſtration ſomewhat doubtful, ſince we hear every other ſound that reaches to us. Others alledge that the ſounds of the ſpheres, being the firſt we hear when we come into the world, and being habituated to them for a long time, when we could ſcarcely think or make reflection on any thing, we become incapable of perceiving them afterwards. But Pythagoras ſaid he perceived and underſtood the celeſtial harmony by a peculiar favour of that ſpirit to whom he owed his life, as Iamblichus reports of him, who ſays, That tho' he never ſung or played on any inſtrument himſelf, yet by an inconceivable ſort of divinity, he taught others to imitate the celeſtial muſic of the ſpheres, by inſtruments and voice: For according to him, all the harmony of ſounds here below, is but an imitation, and that imperfect too, of the other. This ſpecies is by ſome called particularly the mundane muſic. 3d. Human, which conſiſts chiefly in the harmony of the faculties of the human ſoul, and its various paſſions; and is alſo conſidered in the proportion and temperament, mutual dependence and connection, of all the parts of this wonderful machine of our bodies. 4th. Is what in a more limited and peculiar ſenſe of the word was called muſic; which has for its object motion, conſidered as under certain regular meaſures and proportions, by which it affects the ſenſes in an agreeable manner. All motion belongs to bodies, and ſound is the effect of motion, and cannot be without it; but all motion does not produce ſound, therefore this was again ſubdivided. Where the motion is without ſound, or as it is only the object of ſeeing, it was called muſica orcheſtria or ſaltatoria, which contains the rules for the regular motions of dancing; alſo Hypocritica, which reſpects the motions and geſtures of the Pantomimes. When motion is perceived only by the ear, i. e. when ſound is the object of muſic, there are three ſpecies; Harmonica, which conſiders the differences and proportion of ſounds, with reſpect to acute and grave; Rythmica, which reſpects the proportion of ſounds as to time, or the ſwiftneſs and ſlowneſs of their ſucceſſions; and Metrica, which belongs properly to the poets, and reſpects the verſifying art: But in common acceptation 'tis now more limited, and we call nothing muſic but what is heard; and even then we make a variety of tones neceſſary to the being of muſic.

Ariſtides Quintilianus, who writes a profeſt treatiſe upon muſic, calls it the knowledge of ſinging, and of the things that are joined with ſinging (επιϛημη μελȣς και των περι μελος συμβαινοντων, which Meibomius tranſlates, ſcientia cantus, eorumqquæ circa cantum contingunt) and theſe he calls the motions of the voice and body, as if the cantus itſelf conſiſted only in the different tones of the voice. Bacchius, who wrote a ſhort introduction to muſic in queſtion and anſwer, gives the ſame definition. Afterwards, Ariſtides conſiders muſic in the largeſt ſenſe of the word, and divides it into contemplative and active. The firſt, he ſays, is either natural or artificial; the natural is arithmetical, becauſe it conſiders the proportion of numbers; or phyſical, which diſputes of every thing in nature; the artificial is divided into Harmonica, Rythmica (comprehending the dumb motions) and Metrica: The active, which is the application of the artificial, is either enunciative (as in oratory,) organical (or inſtrumental performance,) Odical (for voice and ſinging of poems,) Hypocritical (in the motions of the pantomimes.) To what purpoſe ſome add hydraylical I do not underſtand, for this is but a ſpecies of the organical, in which water is ſome way uſed for producing or modifying the ſound. The muſical faculties, as they call them, are, melopœia, which gives rules for the tones of the voice or inſtrument, rythmopœia for motions, and poeſis for making of verſe. Again, explaining the difference of Rythmus and Metrum, he tells us, That Rythmus is applied thee ways; either to immoveable bodies, which are called eurythmoi, when their parts are rightly proportioned to one another, as a well made ſtatue; or to every thing that moves, ſo we ſay a man walks handſomely (compoſite,) and under this dancing will come the buſineſs of the pantomimes; or particularly to the motion of ſound or the voice, in which the rythmus conſiſts of long and ſhort ſyllables or notes, (which he calls times) joined together (in ſucceſſion) in ſome kind of order, ſo that their cadence upon the ear may be agreeable; which conſtitutes in oratory what is called a numerous ſtile, and when the tones of the voice are well choſen 'tis an harmonious ſtile. Rythmus is perceived either by the eye or the ear, and is ſomething general, which may be without metrum; but this is perceived only by the ear, and is but a ſpecies of the other, and cannot exiſt without it: The firſt is perceived without ſound in dancing; and when it exiſts with ſounds it may either be without any difference of acute and grave, as in a drum, or with a variety of theſe, as in a ſong, and then the harmonica and rythmica are joined; and if any poem is ſet to muſic, and ſung with a variety of tones, we have all the three parts of muſic at once. Porphyrius in his commentaries on Ptolemy's Harmonicks, inſtitutes the diviſion of muſic another way; he takes it in the limited ſenſe, as having motion both dumb and ſonorous for its object; and, without diſtinguiſhing the ſpeculative and practical, he makes its parts theſe ſix, viz. Harmonica, Rythmica, Metrica, Organica, Poetica, Hypocritica; he applies the Rythmica to dancing, Metrica to the enunciative, and Poetica to verſes.

All the other antient Authors agree in the ſame threefold diviſion of muſic into Harmonica, Rythmica, and Metrica: Some add the Organica, others omit it, as indeed it is but an accidental thing to muſic, in what ſpecies of ſounds it is expreſt. Upon this diviſion of muſic, the more ancient writers are very careful in the inſcription or titles of their books, and call them only Harmonica, when they confine themſelves to that part, as Ariſtoxenus, Euclid, Nicomachus, Gaudentius, Ptolomy, Bryennius; but Ariſtides and Bacchius call theirs muſica, becauſe they profeſs to treat of all the parts. The Latins are not always ſo accurate, for they inſcribe all theirs muſica, as Boethius, tho' he only explains the harmonica; and St. Auguſtin, tho' his ſix books de muſica ſpeak only of the rythmus and metrum; Martianus Capella has a better right to the title, for he makes a kind of compend and tranſlation of Ariſtides Quintilian, tho' a very obſcure one of as obſcure an original. Aurelius Caſſiodorus needs ſcarcely be named, for tho' he writes a book de muſica, 'tis but barely ſome general definitions and diviſions of the ſcience.

The harmonica is the part the antients have left us any tolerable account of, which is at beſt but very general and theorical; ſuch as it is, I purpoſe to explain it to you as diſtinctly as I can; but having thus far ſettled the definition and diviſion of muſic as delivered by the antients, I chuſe next to conſider it hiſtorically.

The Invention and Antiquity of Music, with the Excellency of the Art in the various Ends and Uſes of it.

OF all human arts muſic has juſteſt pretences to the honour of antiquity: We ſcarce need any authority for this aſſertion; the reaſon of the thing demonſtrates it, for the conditions and circumſtances of human life required ſome powerful charm, to bear up the mind under the anxiety and cares that mankind ſoon after his creation became ſubject to; and the goodneſs of our bleſſed Creator ſoon diſcovered itſelf in the wonderful relief that muſic affords againſt the unavoidable hardſhips which are annexed to our ſtate of being in this life; ſo that muſic muſt have been as early in the world as the moſt neceſſary and indiſpenſable arts. For

If we conſider how natural to the mind of man this kind of pleaſure is, as conſtant and univerſal experience ſufficiently proves, we cannot think he was long a ſtranger to it. Other arts were revealed as bare neceſſity gave occaſion, and ſome were afterwards owing to luxury; but neither neceſſity nor luxury are the parents of this heavenly art; to be pleaſed with it ſeems to be a part of our conſtitution; but 'tis made ſo, not as abſolutely neceſſary to our being, 'tis a gift of God to us for our more happy and comfortable being; and therefore we can make no doubt that this art was among the very firſt that were known to men. It is reaſonable to believe, that as all other arts, ſo this was rude and ſimple in its beginning, and by the induſtry of man, prompted by his natural love of pleaſure, improved by degrees. If we conſider, again, how obvious a thing ſound is, and how manifold occaſions it gives for invention, we are not only further confirmed in the antiquity of this art, but we can make very ſhrewd gueſſes about the firſt diſcoveries of it. Vocal muſic was certainly the firſt kind; man had not only the various tones of his own voice to make his obſervations upon, before any other arts or inſtruments were found, but being daily entertained by the various natural ſtrains of the winged choirs, how could he not obſerve them, and from thence take occaſion to improve his own voice, and the modulations of ſound, of which it is capable? 'Tis certain that whatever theſe ſingers were capable of, they poſſeſt it actually from the beginning of the world; we are ſurpriſed indeed with their ſagacious imitations of human art in ſinging, but we know no improvements the ſpecies is capable of; and if we ſuppoſe that in theſe parts where mankind firſt appeared, and eſpecially in theſe firſt days, when things were probably in their greateſt beauty and perfection, the ſinging of birds was a more remarkable thing, we ſhall have leſs reaſon to doubt that they led the way to mankind in this charming art: But this is no new opinion; of many antient authors, who agree in this very juſt conjecture, I ſhall only let you hear Lucretius Lib. 5.

At liquidas avium voces imitarier ore
Ante fuit multo, quam lævia carmina cantu
Concelebrare homines poſſent, aureiſque juvare.

The firſt invention of wind-inſtruments he aſcribes to the obſervation of the whiſtling of the winds among the hollow reeds.

Et zephyri cava per calamorum ſibila primum
Agreſteis docuere cavas inflare cicutas,
Inde minutatim dulceis didicere querelas,
Tibia quas fundit digitis pulſata canentum.

or they might alſo take that hint from ſomething that might happen accidentally to them in their handling of corn-ſtalks, or the hollow ſtems of other plants. And other kinds of inſtruments were probably formed by ſuch like accidents: There were ſo many uſes for chords or ſtrings, that men could not but very ſoon obſerve their various ſounds, which might give riſe to ſtringed inſtruments: And for the pulſatile inſtruments, as drums and cymbals, they might ariſe from the obſervation of the hollow noiſe of concave bodies. To make this account of the invention of inſtruments more probable, Kircher bids us conſider, That the firſt mortals living a paſtoral life, and being conſtantly in the fields, near rivers and among woods, could not be perpetually idle; 'tis probable therefore, ſays he, That the invention of pipes and whiſtles was owing to their diverſions and exerciſes on theſe occaſions; and becauſe men could not be long without having uſe for chords of various kinds, and variouſly bent, theſe, either by being expoſed to the wind, or neceſſarily touched by the hand, might give the firſt hint of ſtringed inſtruments; and becauſe, even in the firſt ſimple way of living, they could not be long without ſome fabrile arts, this would give occaſion to obſerve various ſounds of hard and hollow bodies, which might raiſe the firſt thought of the pulſatile inſtruments; hence he concludes that muſic was among the firſt arts.

If we conſider next, the opinion of thoſe that are antients to us, who yet were too far from the beginning of things to know them any other way than by tradition and probable conjecture; we find an univerſal agreement in this truth, That muſic is as ancient as the world itſelf, for this very reaſon, that it is natural to mankind. It will be needleſs to bring many authorities, one or two ſhall ſerve: Plutarch in his treatiſe of muſic, which is nothing but a converſation among friends, about the invention, antiquity and power of muſic, makes one aſcribe the invention to Amphion the ſon of Jupiter and Antiope, who was taught by his father; but in the naming of another he makes Apollo the author, and to prove it, alledges all the antient ſtatues of this god, in whoſe hand a muſical inſtrument was always put. He adduces many examples to prove the natural influence muſic has upon the mind of man, and ſince he makes no leſs than a god the inventor of it, and the gods exiſted before men, 'tis certain he means to prove, both by tradition and the nature of the thing, that it is the moſt ancient as well as the moſt noble ſcience. Quintilian (lib. 1. cap 11.) alledges the authority of Timagenes to prove that muſic is of all the moſt ancient ſcience; and he thinks the tradition of its antiquity is ſufficiently proved by the ancient poets, who repreſent muſicians at the table of kings, ſinging the praiſes of the gods and heroes. Homer ſhews us how far muſic was advanced in his days, and the tradition of its yet greater antiquity, while he ſays it was a part of his Hero's education. The opinion of the divine original and antiquity of muſic, is alſo proved by the fables of the muſes, ſo univerſal among the poets; and by the diſputes among the Greek writers concerning the firſt authors, ſome for Orpheus, ſome for Amphion, ſome for Appollo, &c. As the beſt of the philoſophers owned the providence of the gods, and their particular love and benevolence to mankind, ſo they alſo believed that muſic was from the beginning a peculiar gift and favour of heaven; and no wonder, when they looked upon it as neceſſary to aſſiſt the mind to a raiſed and exalted way of praiſing the gods and good men.

I ſhall add but one teſtimony more, which is that of the ſacred writings, where Jubal the ſixth from Adam, is called the "father of ſuch as handle the harp and organ;" whether this ſignifies that he was the inventor, or one who brought theſe inſtruments to a good perfection, or only one who was eminently ſkilled in the performance, we have ſufficient reaſon to believe that muſic was an art long before his time; ſince it is rational to think that vocal muſic was known long before inſtrumental, and that there was a gradual improvement in the art of modulating the voice; unleſs Adam and his ſons were inſpired with this knowledge, which ſuppoſition would prove the point at once. And if we could believe that this art was loſt by the flood, yet the ſame nature remaining in man, it would ſoon have been recovered; and we find a notable inſtance of it in the ſong of praiſe which the Iſraelites raiſed with their voices and timbrels to God, for their deliverance at the Red Sea; from which we may reaſonably conjecture it was an art well known, and of eſtabliſhed honour long before that time.

It may be expected in this place, that there ſhould be given a more particular hiſtory of the inventor of muſic and muſical inſtruments, and other famous muſicians ſince the flood. As to the invention, there is enough ſaid already to ſhow that muſic is natural to mankind; and therefore inſtead of inventors, the enquiry ought properly to be about the improvers of it; and it would come in very naturally here: but the truth is, we have ſcarce any thing left as we can depend upon in this matter; or at leaſt we have but very general hints, and many of them contrary to each other, from authors that ſpeak of theſe things in a tranſient manner: and as we have no writings of the age in which muſic was firſt reſtored after the flood, ſo the accounts we have are ſuch uncertain traditions, that no two authors agree in every thing. Greece was the country in Europe where learning firſt flouriſhed;

and though we believe they drew from other fountains, as Egypt, and the more eaſtern parts, yet they are the fountains to us, and to all the weſtern world: other antiquities we neither know ſo well, nor ſo much of, at leaſt of ſuch as have any pretence to a greater antiquity, except the Jewiſh; and though we are ſure they had muſic, yet we have no account of the inventors among them, for it is probable they learned it in Egypt; and therefore this enquiry about the inventors of muſic ſince the flood muſt be limited to Greece. Plutarch, Julius Polux, Atheneus, and a few more, are the authorities we have principally to truſt to, who take what they ſay from other more ancient authors of their tradition.

Amphion the Theban, is by ſome reckoned the moſt ancient muſician in Greece, and the inventor of it, as alſo of the lyre. Some ſay Mercury taught him and gave him a lyre of ſeven ſtrings. He is ſaid to be the firſt who taught to play and ſing together. The time he lived in is not agreed upon.

Chiron the Pelithronian, reckoned a demigod, the ſon of Saturn and Phyllira, is the next great maſter; the inventor of medicine, a famous philoſopher and muſician, who had for his ſcholars Æſculapius, Jaſon, Hercules, Theſeus, Achilles, and other heroes.

Demodocus is another celebrated muſician, of whom already.

Hermes, or Mercury Triſmigiſtus, another demigod, is alſo reckoned amongſt the inventors or improvers of muſic and of the lyre.

Linus was a famous poet and muſician, ſome ſay he taught Hercules, Thamyris and Orpheus, and even Amphion. To him ſome aſcrbe the invention of the lyre.

Olympus the Myſian, is another benefactor to muſic; he was the diſciple of Marſyas the ſon of Hyagnis the Phrygian; this Hyagnis is reckoned the inventor of the tibiæ, which others aſcribe to the muſe Euterpe, as Horace inſinuates, "Sinaeque tibias Euterpe cohibet."

Orpheus the Thracian, is alſo reckoned the author, or at leaſt the introducer of various arts into Greece, among which is muſic; he practiſed the lyre he got from Mercury. Some ſay he was maſter to Thamyris and Linus.

Phemius of Ithaca. Ovid uſes his name for any excellent muſician: Homer alſo names him honourably.

Terpander the Leſbian, lived in the time of Lycurgus, and ſet his laws to muſic. He was the firſt who among the Spartans applied melody to poems, or taught them to be ſung in regular meaſures. This is the famous muſician who quelled a ſedition at Sparta by his muſic. He and his followers as ſaid to have firſt inſtituted the muſical mode, uſed in ſinging hymns to the gods; and ſome attribute the invention of the lyre to him.

Thales the Cretan was another great maſter, honourably entertained by the Lacedemonians for inſtructing their youth. Of the wonders he wrought by his muſic, we ſhall hear again.

Thamyris the Thracian was ſo famous, that he is feigned to have contended with the muſes, upon condition he ſhould poſſeſs all their power if he overcame, but if they were victors he conſented to loſe what they pleaſed; and being defeated, they put out his eyes, ſpoiled his voice, and ſtruck him with madneſs. He was the firſt who uſed inſtrumental muſic without ſinging.

Theſe are the remarkable names of muſicians before Homer's time, who himſelf was a muſician, as was the famous poet Pinda. You may find the characters of theſe mentioned at more large, in the firſt book of *Fabritius*'s *Bibliotheca Græca*,

We find others of a latter date, who were famous in muſic, as Laſus Hermionenſis, Melanippides, Philoxenus, Timotheus, Phrynnis, Epigonius, Lyſander, Simmicus, Diodorous the Theban; who were authors of a great variety and luxurious improvements in muſic. Laſus, who lived in the time of Darius Hyſtaſpes, is reckoned the firſt who ever wrote a treatiſe upon muſic. Epigonius was the author of an inſtrument called epigonium, of 40 ſtrings, he introduced playing on the lyre with the hand without a plectrum, and was the firſt who joined the Cithara and Tibia in one concert, altering the ſimplicity of the more ancient muſic; as Lyſander did by adding a great many ſtrings to the Cythara. Simicus alſo invented an inſtrument called ſimmicicum of 35 ſtrings. Diodorus improved the tibia, which at firſt had but four holes, by contriving more holes and notes.

Timotheus, for adding a ſtring to his lyre was fined by the Lacedemonians, and the ſtring ordered to be taken away. Of him and Phrynnis, the comit poet Pherecrates makes bitter complaints in the name of muſic, for corrupting and abuſing her, as Plutarch reports; for, among others, they chiefly had completed the ruin of the ancient ſimple muſic, which ſays Plutarch, was nobly uſeful in the education and forming of youth, and the ſervice of the temples, and uſed principally to theſe purpoſes, in the ancient times of greateſt wiſdom and virtue, but was ruined after theatrical ſhews came to be ſo much in faſhion, ſo that ſcarcely the memory of theſe ancient modes remained in his time. You ſhall have ſome account afterwards of the ancient writers of muſic.

As we have but uncertain acconuts of the inventors of muſical inſtruments among the ancients, ſo we have as imperfect an account of what theſe inſtruments were, ſcarce knowing them any more than by name. The general diviſion of inſtruments, is into ſtringed inſtruments, wind inſtruments and the pulſatile kind; of this laſt we hear of the tympanum or cymbalum, of the nature of our drum; the Greeks gave it the laſt name from its figure, reſembling a boat.

There were alſo the crepitaculum, tintinabulum, crotalum ſiſtrum; but by any accounts we have, they look rather like childrens rattles and play things than muſical inſtruments.

Of wind-inſtruments, we hear of the tibia, ſo called from the ſhank-bone of ſome animals, as cranes, of which they were firſt made. And fiſtula made alſo of reeds. But theſe were afterwards made of wood and alſo of metal. How they were blown, whether as flutes or hautboys or otherwiſe, and which the one way, and which the other, is not ſufficiently manifeſt. It is plain ſome had holes, which at firſt were but few, and afterwards increaſed to a greater number; ſome had none; ſome were ſingle pipes, and ſome a combination of ſeverals, particularly Pan's ſyringa, which conſiſted of ſeven reeds joined together ſide-ways; they had no holes, each giving but one note, in all ſeven diſtinct notes, but at what mutual diſtances is not very certain, though perhaps they were the notes of the natural or diatonic ſcale, but by this means they would want an 8ve, and therefore probably otherwiſe conſtituted. Sometimes they played on a ſingle pipe, ſometimes on two together, one in each hand. And leſt we ſhould think there could muſic be expreſſed by one hand, Iſ. Voſſias, alledges, they had a contrivance by which they made one hole expreſs ſeveral notes, and cites a paſſage of

Arcadius the grammarian to prove it; that author ſays indeed, that there were contrivances to ſhut and open the holes when they had a mind, by pieces of horn he calls Bombyces and Opholmioi (which Julius Pollux alſo mentions as parts of ſome kind of tibiæ) turning them upwards or downwards, inwards or outwards: but the uſe of this is not clearly taught us, and whether it was that the ſame pipe might have more notes than holes, which might be managed by one hand: perhaps it was no more than a like contrivance in our common bagpipes, for tuning the drones to the key of the ſong. We are alſo told that Hyagnis contrived the joining of two pipes, ſo that one canal conveyed wind to both, which therefore were always ſounded together.

We hear alſo of Organs, blown at firſt by a kind of air-pump, where alſo water was ſome way uſed, and hence called, organum hydraulicum; but afterwards they uſed bellows. Vitruvious, has an obſcure deſcription of it, which Iſ. Voſſius and Kircher both endeavour to clear.

There were tubæ, and cornua, and litui, of the trumpet kind, of which there were different ſpecies invented by different people. They talk of ſome kind of tubæ, that without any art in the modulation, had ſuch a prodiguous ſound, that was enough to terrify one.

Of ſtringed inſtruments, the firſt is the lyre or cithara (which ſome diſtinguiſh:) Mercury is ſaid to be inventor of it, in this manner; after an inundation of the Nile he found a dead ſhell-fiſh, which the Greeks call chelone, and the Latins teſtudo; of this ſhell he made his lyre, mounting it with ſeven ſtrings, as Lucian ſays; and added a kind of jugum to it, to lengthen the ſtrings, but not ſuch as our violins have, whereby one ſtring contains ſeveral notes; by the common form this jugum ſeems no more than two diſtinct pieces of wood, ſet parallel, and at ſome diſtance, but joined at the farther end, where there is a head to receive pins for ſtretching the ſtrings. Boethius reports the opinion of ſome that ſay, the lyre mercurii had but four ſtrings in imitation of the mundane muſic of the four elements: but Diodorus Siculus ſays, it had only three ſtrings, in imitation of the three ſeaſons of the year, which were all the ancient Greeks counted. viz. Spring, ſummer and winter. Nicomachus, Horace, Lucian and others ſay, it had ſeven ſtrings in imitation of the ſeven planets. Some reconcile

Diodorus, with the laſt, thus, they ſay the more ancient lyre had but three or four ſtrings, and Mercury added other three, which made up ſeven. Mercury gave this ſeven ſtringed lyre to Orpheus, who being torn to pieces by the Baccannals, the lyre was hung up in Apollo's temple by the Leſbians: But others ſay, Pythagorus found it in ſome temple of Egypt, and added an eighth ſtring. Nicomachus ſays, Orpheus being killed by the Thracian woman, for contemning their religion in the Bacchanalian rites, his lyre was caſt into the ſea, and thrown up at Antiſſa a city of Leſbos; the fiſhers finding it gave it to Terpander, who carrying it to Egypt, gave it to the prieſts, and called himſelf the inventor. Thoſe who call it four ſtringed, make the proportions thus, betwixt the 1ſt and 2d, the interval of a 4th, 3: 4, betwixt the 2d and 3d, a tone 8 : 9, and betwixt the 3d and 4th ſtring another 4th: the ſeven ſtrings were diatonically diſpoſed by tones and ſemitones, and Pythagoras's eighth ſtring made up the octave.

The occaſion of aſcribing the invention of this inſtrument to ſo many authors, is probably, that they have each in different places invented inſtruments much reſembling other. However ſimple it was at firſt, it grew to a great number of ſtrings; but it is to no purpoſe to repeat the names of theſe who are ſuppoſed to have added new ſtrings to it.

From this inſtrument, which all agree to be firſt of the ſtringed kind in Greece, aroſe a multitude of others, differing in their ſhape and number of ſtrings, of which we have but indiſtinct accounts. We hear of the pſalterium, trigon, ſambuca, pectis, magadis, barbiton, teſtudo (the two laſt uſed by Horace promſcuouſly with the lyre and cithara) epigonium, ſimicium, pandura, which were all ſtruck with the hand or a plectrum; but it does not appear that they uſed any thing like the bows of hair we have now for violins, which is a moſt noble contrivance for making long and ſhort ſounds, and giving them a thouſand modifications it is impoſſible to produce by a plectrum.

Kircher alſo obſerves, that in all the ancient monuments, where inſtruments are put in the hands of Apollo and the muſes, as there are many of them at Rome, ſays he, there is none to be found with ſuch a jujum as our violins have, whereby each ſtring has ſeveral notes, but every ſtring has only one note; and this he makes an argument of the ſimplicity and imperfection of their inſtruments. Beſides ſeveral forms of the lyre kind, and ſome fiſtulæ, he is poſitive they had no inſtruments worth naming. He conſiders how careful they were to tranſmit, by writing and other monuments, their moſt trifling inventions, that they might not loſe the glory of them; and concludes, if they had any thing more perfect, we ſhould certainly have heard of it, and had it preſerved, when they were at pains to give us the figure of their trifling reed-pipes, which the ſhepherds commonly uſed. But indeed I find ſome paſſages that cannot be well underſtood, without ſuppoſing they had inſtruments in which one ſtring had more than one note: where Pherecrates (already mentioned) makes muſic complain of her abuſes from Timotheus's innovations; ſhe ſays, he had deſtroyed her who had twelve harmonies in five ſtrings; whether theſe harmonies ſignify ſingle notes or conſonances, it is plain each ſtring muſt afforded more than one note. And Plutarch aſcribes to Terpander a lyre of three chords, yet he ſays it had ſeven ſounds, i. e. notes.

Thoſe who are curious to hear more of this, and ſee the figures of inſtruments both ancient and modern, muſt go to Merſennus and Kircher.

The Excellency and various Uses of MUSIC.

THOUGH the reaſons alledged for the antiquity of muſic, ſhew us the dignity of it, yet I believe it will be agreeable to enter into a more particular hiſtory of the honour muſic was in among the ancients, and of its various ends and uſes, and the pretended virtues and powers of it.

The reputation this art was in with the Jewiſh nation, is, I ſuppoſe, well known by the ſacred hiſtory. Can any thing ſhew the excellency of an art more, than that it was reckoned uſeful and neceſſary in the worſhip of God; and as ſuch, diligently practiſed and cultivated by a people ſeparated from the reſt of mankind, to be witneſſes for the Almighty, and preſerve the true knowledge of God upon the earth? I have already mentioned the inſtance of the Iſraelites ſong upon the delivery at the Red-ſea, which ſeems to prove that muſic both vocal and inſtrumental, was an approved and ſtated manner of worſhipping God: and we cannot doubt that it was according to his will, for Moſes the man of God, and Miriam the propheteſs, were the chiefs of this ſacred choir: and that from this time to that of the royal prophet David, the art was honoured and encouraged by them both publicly and privately, we can make no doubt; for when Saul was troubled with an evil ſpirit from the Lord, he is adviſed to call for a cunning player upon the harp, which ſuppoſes it was a well known art in that time; and behold, David, yet an obſcure and private perſon, being famous for his ſkill in muſic, was called; and upon his playing, "Saul was refreſhed and was well, and the evil ſpirit departed from him." Nor when David was advanced to the kingdom thought he this exerciſe below him, eſpecially the religious uſe of it. When the ark was brought from Kirjath-jearim, "David and all Iſrael played before God with all their might, and with ſinging, and with harps, and with pſalteries, and with timbrels, and with cymbals, and with trumpets," 1 Chron. xiii. 8. And the ark being ſet up in the city of David, what a ſolemn ſervice was inſtituted for the public worſhip and praiſe of God; ſingers and players on all manner of inſtruments, "to miniſter before the ark of the Lord continually, to record, and to thank, and praiſe the Lord God of Iſrael!" Theſe ſeem to have been divided into three choirs, and over them appointed three Coragi or maſters, Aſaph, Heman and Jeduthun, both to inſtruct them and to preſide in the ſervice: but David himſelf was the chief muſician and poet of Iſrael. And when Solomon had finiſhed the temple, behold, at the dedication of it, "the Levites which were the ſingers, all of them of Aſaph, of Heman, of Jeduthun, having cymbals, and pſalteries, and harps, ſtood at the eaſt-end of the alter, praiſing and thanking the Lord." And this ſervice, as David had appointed before the ark, continued in the temple; for we are told, that the king and all the people having dedicated the houſe to God, "The prieſts waited on their offices; the Levites alſo with inſtruments of muſic of the Lord, which David the king had made to praiſe the Lord.

The prophet Eliſha knew the virtue of muſic, when he called for a minſtril to compoſe his mind (as is reaſonably ſuppoſed) before "the hand of Lord came upon him."

To this I ſhall add the opinion and teſtimony of St. Chryſoſtom, in his commentary on 40th Pſalm, he ſays to this purpoſe, 'That God knowing Men to be backward and ſlothful in ſpiritual things, and impatient of the labour and pains which they require, willing to make the taſk more agreeable, and prevent our wearineſs, he joined melody or muſic with his worſhip; that as we are all naturally delighted with harmonious numbers, we might with readineſs and chearfulneſs of mind expreſs his praiſe in ſacred hymns. For, ſays he, nothing can raiſe the mind, and, as it were, give wings to it, free it from earthlineſs, and the confinement 'tis under by union with the body, inſpire it with the love of wiſdom, and make every thing pertaining to this life agreeable, as well modulated verſe and divine ſongs harmoniouſly compoſed. Our natures are ſo delighted with muſic, and we have ſo great and neceſſary inclination and tendency to this kind of pleaſure, that even infants at the breaſt are ſoothed and lulled to reſt by this means.' Again he ſays, 'Becauſe this pleaſure is ſo familiar and connate with our minds, that we might have both profit and pleaſure, God appointed pſalms, that the Devil might not ruin us with profane and wicked ſongs.' And tho' there be now ſome difference of opinion about its uſe in ſacred things, yet all chriſtians keep up the practice of ſinging hymns and pſalms, which is enough to confirm the general principle of muſic's ſuitableneſs to the worſhip of God.

In St. John's viſion, the elders are repreſented with harps in their hands; and tho' this be only repreſenting things in heaven, in a way eaſieſt for our conception, yet we muſt ſuppoſe it to be a compariſon to the beſt manner of worſhipping God among men, with reſpect at leaſt to the means of compoſing and raiſing our minds, or keeping out other ideas, and thereby fitting us for entertaining religious thoughts.

Let us next conſider the eſteem and uſe of it among the ancient Greeks and Romans. The glory of this art among them, eſpecially the Greeks, appears firſt, according to the obſervation of Quintilian, by the names given to the poets and muſicians, which at the beginning were generally the ſame perſon, and their characters thought to be ſo connected, that the names were reciprocal; they were called Sages or Wiſemen, and the inſpired. Salmuth on Pancirollus cites Ariſtophanes to prove, that by citharæ callens, or one that was ſkilled in playing on the cithara, the ancients meant a wiſe man, who was adorned with all the graces; as they reckoned one who had no ear or genius to muſic, ſtupid, or whoſe frame was diſordered, and the elements of his compoſition at war among themſelves. And ſo high an opinion they had of it, that they thought no induſtry of man could attain to ſuch an excellent art; and hence they believed this faculty to be an inſpiration from the Gods; which alſo appears particularly by their making Apollo the author of it, and then making their moſt ancient muſicians, as Orpheus, Linus, and Amphion, of divine offspring. Homer, who was himſelf both poet and muſician, could have ſuppoſed nothing more to the honour of his profeſſion, than making the Gods themſelves delighted with it; after the fierce conteſt that happened among them about the Grecian and Trojan affairs, he feigns them recreating themſelves with Apollo's muſic; and after this, 'tis no wonder he thought it not below his Hero to have been inſtructed in, and a diligent practiſer of this Godlike art. And do not the poets univerſally teſtify this opinion of the excellency of muſic, when they make it a part of the entertainment at the tables of kings; where to the ſound of the lyre they ſung the praiſes of the Gods and Heroes, and other uſeful things: As Homer in the Odyſſea introduces Demodocus at the table of Alcinous, King of Phæacea, ſinging the Trojan war and the praiſes of the Heroes: And Virgil brings in Jopas at the table of Dido, ſinging to the ſound of his golden harp, what he had learned in natural philoſophy, and particularly in aſtronomy from Atlas; upon which Quintilian makes this reflection, that hereby the poet intends to ſhew the connection there is between muſic and heavenly things; and Horace teaches us the ſame doctrine, when addreſſing his lyre, he cries out, " O decus Phœbi, & dapibus ſupremi, grata teſtudo, Jovis.

At the beginning, muſic was perhaps ſought only for the ſake of innocent pleaſure and recreation; in which view Ariſtotle calls it the medicine of that heavineſs that proceeds from labour; and Horace calls his lyre laborem dulce lenimen: And as this is the firſt and moſt ſimple, ſo it is certainly no deſpicable uſe of it; our circumſtances require ſuch a help to make as undergo the neceſſary toils of life more chearfully. Wine and muſic chear the heart, ſaid the wiſe man; and that the ſame power ſtill remains, does plainly appear by univerſal experience. Men naturally ſeek pleaſure, and the wiſer ſort ſtudying how to turn this deſire into the greateſt advantage, and mix the utile dulci, happily contrived, by bribing the ear, to make way into the heart. The ſevereſt of the philoſophers approved of muſic, becauſe they found it a neceſſary means of acceſs to the minds of men, and of engaging their paſſions on the ſide of virtue and the laws; and ſo muſic was made an handmaid to virtue and religion.

Jamblichus in the life of Pythagoras tells us, That muſic was a part of the diſcipline by which he formed the minds of his ſcholars. To this purpoſe he made, and taught them to make and ſing, verſes calculated againſt the paſſions and diſeaſes of their minds; which were alſo ſung by a chorus, ſtanding round one that played upon the lyre, the modulations whereof were perfectly adapted to the deſign and ſubject of the verſes. He uſed alſo to make them ſing ſome choice verſes out of Homer and Heſiod. Muſic was the firſt exerciſe of his ſcholars in the morning; as neceſſary to fit them for the duties of the day, by bringing their minds to a right temper; particularly he deſigned it as a kind of medicine againſt the pains of the head, which might be contracted in ſleep: And at night, before they went to reſt, he taught them to compoſe their minds after the perturbations of the day, by the ſame exerciſe.

Whatever virtue the Pythagoreans aſcribed to muſic, they believed the reaſon of it to be, That the ſoul itſelf conſiſted of harmony; and therefore they pretended by it to revive the primitive harmony of the faculties of the ſoul. By this primitive harmony they meant that which, according to their doctrine, was in the ſoul in its pre-exiſtent ſtate in heaven. Macrobius, who is plainly Pythagorean in this point, affirms, That every ſoul is delighted with muſical ſounds; not the polite only but the moſt barbarous nations practiſe muſic, whereby they are excited to the love of virtue, or diſſolved in ſoftneſs and pleaſure: The reaſon is, ſays he, That the ſoul brings into the body with it the memory of the muſic which it was entertained with in heaven: And there are certain nations, ſays he, That attend the dead to their burial with ſinging; becauſe they believe the ſoul returns to heaven the fountain or original of muſic. Lib. 2. in Somnium Scipionis. And becauſe this ſect believed the Gods themſelves to have celeſtial bodies of a moſt perfect harmonious compoſition, therefore they thought the Gods were delighted with it; and that by our uſe of it in ſacred things, we not only compoſe our minds, and fit them better for the contemplation of the Gods, but imitate their happineſs, and thereby are acceptable to them, and open for ourſelves a return into heaven.

Athenæus reports of one Clinias a Pythagorean, who, being a very choleric and wrathful man, as ſoon as he found his paſſion begin to riſe, took up his lyre and ſung, and by this means allayed it. But this diſcipline was older than Pythagoras; for Homer tells us, That Achilles was educated in the ſame manner by Chiron, and feigns him, after the hot diſpute he had with Agamemnon, calming his mind with his ſong and lyre: And tho' Homer ſhould be the author of this ſtory, it ſhews however that ſuch an uſe was made of muſic in his days; for 'tis reaſonable to think he had learned this from experience.

The virtuous and wiſe Socrates was no leſs a friend to this admirable art; for even in the decline of his age he applied himſelf to the lyre, and carefully recommended it to others. Nor did the divine Plato differ from his great maſter in this point; he allows it in his common-wealth; and in many places of his works ſpeaks with the greateſt reſpect of it, as a moſt uſeful thing in ſociety. He ſays it has as great influence over the mind, as the air has over the body; and therefore he thought it was worthy of the law to take care of it. He underſtood the principles of the art ſo well, that, as Quintilian juſtly obſerves, there are many paſſages in his writings not to be underſtood without a good knowledge of it. Ariſtotle in his politics agrees with Plato in his ſentiments of muſic.

Ariſtides the philoſopher and muſician, in the introduction to his treatiſe on this ſubject, ſays, 'tis not ſo confined either as to the ſubject matter or time as other arts and ſciences, but adds ornament to all the parts and actions of human life: Painting, ſays he, attains that good which regards the eye, medicine and gymnaſtic are good for the body, dialectic and that kind helps to acquire prudence, if the mind be firſt purged and prepared by muſic. Again, it beautifies the mind with the ornaments of harmony, and forms the body with decent motions: 'tis fit for young ones, becauſe of the advantages got by ſinging; for perſons of more age, by teaching them the ornaments of modulate diction, and of all kinds of eloquence; to others more advanced it teaches the nature of number, with the variety of proportions, and the harmony that thereby exiſts in all bodies, but chiefly the reaſons and nature of the ſoul. He ſays, as wiſe huſband-men firſt caſt out weeds and noxious plants, then ſow the good ſeed, ſo muſic is uſed to compoſe the mind, and fit it for receiving inſtruction: for pleaſure, ſays he, is not the proper end of muſic, which affords recreation to the mind only by accident, the propoſed end being the inſtilling of virtue. Again, he ſays, if every city, and almoſt every nation loves decency and humanity, muſic cannot poſſibly be uſeleſs.

It was uſed at the feaſts of princes and heroes, ſays Athenæus, not out of levity and vain mirth; but rather as a kind of medicine, that by making their minds cheerful, it might help their digeſtion: There, ſays he, they ſung the praiſes of the Gods and heroes and other uſeful and inſtructive compoſures, that their minds might not be neglected while they took care of their bodies; and that from a reverence of the Gods, and by the example of good men, they might be kept within the bounds of ſobriety and moderation.

But we are not confined to the authority and opinion of philoſophers or any particular perſons; we have the teſtimony of whole nations where it had public encouragement, and was made neceſſary by the law; as in the moſt part of the Grecian common-wealths.

Athenæus aſſures us, That anciently all their laws divine and civil, exhortations to virtue, the knowledge of divine and human things, the lives and actions of illuſtrious men, and even hiſtories, and mentions Herodotus, were written in verſe and publicly ſung by a chorus, to the ſound of inſtruments; they found this by experience an effectual means to impreſs morality, and a right ſenſe of duty: Men were attentive to things that were propoſed to them in ſuch a ſweet and agreeable manner, and attracted by the charms of harmonious numbers, and well modulated ſounds; they took pleaſure in repeating theſe examples and inſtructions, and found them eaſier retained in their memories. Ariſtotle alſo in his problems tells us, That before the uſe of letters, their laws were ſung muſically, for the better retaining them in memory. We have a very old and remarkable proof of this virtue of muſic in the ſtory of Orpheus and Amphion, both of them poets and muſicians, who made a wonderful impreſſion upon a rude and uncultivated age, by their virtuous and wiſe inſtructions, inforced by the charms of poetry and muſic: The ſucceeding poets, who turned all things into myſtery and fable, feign the one to have drawn after him, and tamed the moſt ſavage beaſts; and the other to have animated the very trees and ſtones, by the power of muſic, Horace had received the ſame traditions of all the things I have now narrated, and with theſe mentions other uſes of muſic. The paſſage is in his book de arte Poetica, and is worth repeating.

Silveſtres homines, ſacer interpreſq; deorum,
Cædibus & victu fædo, deterruit Orpheus:
Dictus ob hoc lenire tigres, rabidoſq; leones:
Dictus & Amphion, Thebanæ conditor arcis,
Saxa movere ſono teſtudinis, & prece blanda
Ducere quo vellet. Fuit hæc ſapientia quondam,
Publica privatis ſecernere, ſacra profanis:
Concubitu prohibere vago: dare ſacra maritis:
Oppida moliri: leges incidere ligno:
Sic honor, & nomen divinis vatibus, atque
Carminibus venit. Poſt hos inſignis Homerus,
Tyrtæuſq; *mares animos in martia bella*
Verſibus exacuit. Dictæ per carmina ſortes:
Et vitæ monſtrata via eſt: & gratia regum
Pieriis tentata modis: luduſq; repertus,
Et longorum operum finis: ne forte pudori,
Sit tibi muſa lyræ ſolers, et cantor Apollo.

From theſe experiences I ſay, the art was publicly honoured by the governments of Greece, It was by the law made a neceſſary part of the education of youth. Plato aſſures us it was thus at Athens; in his firſt Alcibiades, he mentions to that great man, in Socrates's name, how he was taught to read and write, to play on the harp, and wreſtle. And in his Crito, he ſays, did not the laws moſt reaſonably appoint that your father ſhould educate you in muſic and gymnaſtic? And we find theſe three, grammar, muſic and gymnaſtic, generally named together, as the known and neceſſary parts of the education of youth, eſpecially of the better ſort: Plutarch and Athenæus give abundant teſtimony to this; and Terence having laid the ſcene of his plays in Greece, or rather only tranſlated, and at moſt but imitated Menander, gives us another proof, in the Act 3. Scene 2. of his Eunuch. Fac periculum in literis, fac in palæſtra, in muſicis. Quæ liberum ſcire æquum eſt adoleſcentem ſolertem dabo.

The uſe of muſic in the Temples and ſolemn ſervice of their Gods is paſt all queſtion. Plato in his Dialogues concerning the laws, gives this account of the ſacred muſic. That every ſong conſiſt of pious words. That we pray to God to whom we ſacrifice. That the poets, who know that prayers are petitions or requeſts to the Gods, take good heed they don't aſk ill inſtead of good, and do nothing but what's juſt, honeſt, good and agreeable to the laws of the ſociety; and that they ſhew not their compoſitions to any private perſon, before thoſe have ſeen and approved them who are appointed judges of theſe things, and keepers of the laws: then, hymns to the praiſes of the Gods are to be ſung, which are very well connected with prayer; and after the Gods, prayers and praiſes are to be offered to the dæmons and heroes.

As they had poetical compoſitions upon various ſubjects for their public ſolemnities, ſo they had certain determinate modes both in the harmonia and rythmus, which it was unlawful to alter; and which were hence called nomi or laws, and muſica canonica. They were jealous of any innovations in this matter, fearful that a liberty being allowed, it might be abuſed to luxury; for they believed there was a natural connection between the public manners and muſic: Plato denied that the muſical modes or laws could be changed without a change of the public laws; he meant, the influence of muſic was ſo great, that the changes in it would neceſſarily produce a proportional change of manners and the public conſtitution.

The uſe of it in war will eaſily be allowed to have been by public authority; and the thing we ought to remark is, that it was not uſed as a mere ſignal, but for inſpiring courage, raiſing their minds to the ambition of great actions, and freeing them from baſe and cowardly fear; and this was not done without great art, as Virgil ſhews when he ſpeaks of Miſenus,

> —*Quo non præſtantior alter,*
> *Ære ciere viros, martemque accendere cantu.*

From Athens let us come to Lacedemon, and here we find it in equal honour. Their opinion of its natural influence was the ſame with that of their neighbours: and to ſhew what care was taken by the law, to prevent the abuſe of it to luxury, the hiſtorians tell us that Timotheus was fined for having more than ſeven ſtrings on his lyre, and what were added ordered to be taken away. The Spartans were a warlike people, yet very ſenſible of the advantage of fighting with a cool and deliberate courage; therefore as Gellius out of Thucydides reports, they uſed not in their armies, inſtruments of a more vehement ſound, that might inflame their temper and make them more furious, as the tuba, cornu and lituus, but the more gentle and moderate ſounds and modulations of the tibia, that their minds being more compoſed, they might engage with a rational courage. And Gellius tells us, the Cretans uſed the Cithara to the ſame purpoſe in their armies. We have already heard how this people entertained at great expence the famous Thales to inſtruct their youth in muſic; and after their muſic had been thrice corrupted, thrice they reſtored it.

If we go to Thebes, Epaminondas will be a witneſs of the eſteem it was in, as Corn. Nepos informs us.

Athenæus reports, upon the authority of Theopompus, that the Getan ambaſſadors, being ſent upon an embaſſy of peace, made their entry with lyres in their hands, ſinging and playing to compoſe their minds, and make themſelves maſters of their temper. We need not then doubt of its public encouragement among this people.

But the moſt famous inſtance in all Greece, is that of the Arcadians, a people, ſays Polybius, in reputation for virtue among the Greeks; eſpecially for their devotion to the Gods. Muſic, ſays he, is eſteemed every where, but to the Arcadians it is neceſſary, and allowed a part in the eſtabliſhment of their ſtate, and an indiſpenſable part of the education of their children. And tho' they might be ignorant of other arts and ſciences without reproach, yet none might preſume to want knowledge in muſic, the law of the land making it neceſſary; and inſufficiency in it was reckoned infamous among that people. It was not thus eſtabliſhed, ſays he, ſo much for luxury and delight, as from a wiſe conſideration of their toilſome and induſtrious life, owing to the cold and melancholy air of their climate; which made them attempt every thing for ſoftning and ſweetning thoſe auſterities they were condemned to. And the neglect of this diſcipline he gives as the reaſon of the barbarity of the Cynæthians, a people of Arcadia.

We ſhall next conſider the ſtate of muſic among the ancient Romans. Till luxury and pride ruin'd the Manners of this brave nation, they were famous for a ſevere and exact virtue. And tho' they were convinced of the native charms and force of muſic, yet we don't find they cheriſhed it to the ſame degree as the Greeks; from which one would be tempted to think they were only afraid of its power, and the ill uſe it was capable of: A caution that very well became thoſe who valued themſelves ſo much, and juſtly, upon their piety and good manners.

Corn. Nepos, in his preface, takes notice of the differences between the Greek and Roman cuſtoms, particularly with reſpect to muſic; and in the life of Epaminondas, he has theſe words, Scimus enim muſicum noſtris moribus abeſſe a principis perſona; ſaltare etiam in vitiis poni, quæ omnia apud Græcos & gratia & laude digna ducuntur.

Cicero in the beginning of the firſt book of his Tuſculan Queſtions, tells us, that the old Romans did not ſtudy the more ſoft and polite arts ſo much as the

Greeks; being more addicted to the ſtudy of morality and government: hence muſic had a fate ſomewhat different at Rome.

But the ſame Cicero ſhews us plainly his own opinion of it. Lib. 2. de Legibus; Aſſentior enim Platoni, nihil tam facile in animos teneros atque molles influere quam varios canendi ſonos. Quorum dici vix poteſt quanta ſit vis in utramque partem, namque & incitat languentes, & languefacit incitatos, et tum remittit animos, tum contrahit. Certainly he had been a witneſs to this power of ſound, before he could ſpeak ſo; and I ſhall not believe he had met with the experiment only at Athens. A man ſo famous for his eloquence, muſt have known the force of harmonious numbers, and well proportioned tones of the voice.

Quintilian ſpeaks honourably of muſic. He ſays, Lib. 1. Chap. 11. Nature ſeems to have given us this gift for mitigating the pains of life, as the common practice of all labouring men teſtifies. He makes it neceſſary to his orator, becauſe, ſays he, Lib. 8. Chap. 4. It is impoſſible that a thing ſhould reach the heart which begins with choking the ear; and becauſe we are naturally pleaſed with harmony, otherwiſe Inſtruments of muſic that cannot expreſs words would not make ſuch ſurpriſing and various effects upon us. And in another place, where he is proving art to be only nature perfected, he ſays, muſic would not otherwiſe be an art, for there is no nation which has not its ſongs and dances.

Some of the firſt rank at Rome practiſed it. Athenæus ſays of one Maſurius, a lawyer, whom he calls one of the beſt and wiſeſt of men, and inferior to none in the law, that he applied himſelf to muſic diligently. And Plutarch places muſic, viz. ſinging and playing on the lyre, among the qualifications of Metella, the daughter of Scipio Metellus.

Macrobius in the 10 Chap. Lib. 2. of his Saturnalia ſhews us, that neither ſinging nor dancing were reckoned diſhonourable exerciſes even for the quality among the ancient Romans; particularly in the times between the two Punick wars, when their virtue and manners were at the beſt; provided they were not ſtudied with too much curioſity, and too much time ſpent about them; and obſerves, that it is this, and not ſimply the uſe of theſe, that Saluſt complains of in Sempronia, when he ſays ſhe knew pſallere & ſaltare elegantius quam neceſſe erat probæ. What an opinion Macrobius himſelf had of muſic we have in part ſhewn already; to which let us add here this remarkable paſſage in the place formerly cited. Ita denique omnis habitus animæ cantibus gubernatur, ut & ad bellum progreſſui & etiam receptui canatur, cantu & excitante & rurſus ſedante virtutem; dat ſomnos adimitque necnon curas & immittit & retrahit, iram ſuggerit, clementiam ſuadet, corporum quoque morbis medetur. Hinc eſt quod ægris remedia præſtantes præcinere dicuntur. The abuſe of it, which 'tis probable lay chiefly in their idle, ridiculous, and laſcivious dancing, or perhaps their ſpending too much time even in the moſt innocent part of it, and not applying it to the true ends, made the wiſer ſort cry out, and brought the character of a muſician into ſome diſcredit. But we find, that the true and proper muſic was ſtill in honour and practiſe among them: had Rome ever ſuch poets, or were they ever ſo honoured as in Auguſtus's reign? Horace, tho' he complains of the abuſe of the theatre, and the muſic of it, yet in many places he ſhews us, that it was then the practiſe to ſing verſes or odes to the ſound of the lyre, or of pipes, or of both together; Lib. 4. Ode 9. Verba loquor ſocianda chordis. Lib. 2. Ep. 2. Hic ego verba lyræ motura ſonum connectere digner? In the firſt Ode, Lib. 1. he gives us his own character as a poet and muſician, Si neque tibias Euterpe cohibet, &c. He ſhews us, that it was in his time uſed both publicly in the praiſe of the gods and men, and privately for recreation, and at the tables of the great, as we find clearly in theſe paſſages. Lib. 4. Ode 11. Condiſce modos amanda voce quos reddas, minuentur atræ carmine curæ. Lib. 3. Ode 28. Nos cantabimus invicem Neptunum, tu curva recines lyra Latonam, &c. Lib. 4. Ode 15. Noſque & profeſtis lucibus & ſacris-Rite Deos prius adprecati, virtute functos more patrum duces, Lydis remiſto carmine tibiis Trojamque, &c. canemus. Epode 9. Quando repoſtum cæcubum ad feſtas dapes tecum.—Beate Mecænas bibam? Sonante miſtis tibiis carmen lyra. Lib, 3. Ode 11. Tuque teſtudo—Nunc & divitum menſis & amica templis.

For all the abuſes of it, there were ſtill ſome, even of the beſt characters, that knew how to make an innocent uſe of it: Sueton in Titus's life, whom he calls Amor ac deliciæ generis humani, among his other accompliſhments adds, Sed ne Muſicæ quidem rudis, ut qui cantaret & pſalleret jucunde ſcienterque.

There is enough ſaid to ſhew the real value and uſe of muſic among the ancients. I believe it will be needleſs to inſiſt much upon our own experience; I ſhall only ſay, theſe powers of muſic remain to this day, and are as univerſal as ever. We uſe it ſtill in war and in ſacred things, with advantages that they only know who have the experience. But in common life, almoſt every body is a witneſs of its ſweet influences.

What a powerful impreſſion muſical ſounds make even upon the brute animals, eſpecially the feathered kind, we are not without ſome inſtances. But how ſurpriſing are the accounts we meet with among the old writers? I have reſerved no place for them here. You may ſee a variety of ſtories in Ælian's Hiſtory of Animals, Strabo, Pliny, Marcianus Capella, and others.

Before I leave this, I muſt take notice of ſome of the extraordinary effects aſcribed to muſic. Pythagoras is ſaid to have had an abſolute command of the human paſſions, to turn them as he pleaſed by muſic: they tell us, that meeting a young man who in great fury was running to burn his rival's houſe, Pythagoras allayed his temper, and diverted the deſign, by the ſole power of muſic. The ſtory is famous how Timotheus, by a certain ſtrain or modulation, fired Alexander's temper to that degree, that forgetting himſelf, in a warlike rage, he killed one of the company, and by a change of the muſic was ſoftned again, even to a bitter repentance of what he had done. But Plutarch ſpeaks of one Antigenides, a Tibicen or piper, who by ſome warlike ſtrain had tranſported that hero ſo far, that he fell upon ſome of the company. Terpander quelled a Sedition at Sparta by means of muſic. Thales being called from Crete, by advice of the oracle, to Sparta, cured a raging peſtilence by the ſame means. The cure of diſeaſes by muſic is talked of with enough of confidence. Aulus Gellius, Lib. 4. Chap. 13, tells us, it was a common tradition, that thoſe who were troubled with the Sciatica (he calls them Iſchiaci) when their pain was moſt exquiſite, were eaſed by certain gentle modulations of muſic performed upon the Tibiæ; and ſays, he had read in Theophraſtus, that by certain artful modulations of the ſame kind of inſtrument, the bites of ſerpents or vipers had been cured. Clytemneſtra had her vicious inclinations to unchaſtity corrected by the applications of muſicians. And a virtuous woman is ſaid to have diverted the wicked deſign of two rakes that aſſaulted her, by ordering a piece of muſic to be performed in the Spondean mode.

A ſhort HISTORY of the IMPROVEMENTS in MUSIC.

FOR what reaſons the Greek muſicians made ſuch a difficult matter of their notes and ſigns we cannot gueſs, unleſs they did it deſignedly to make their art myſterious, which is an odious ſuppoſition; but one can ſcarcely think it was otherwiſe, who conſiders how obvious it was to find a more eaſy method. This was therefore the firſt thing the Latins corrected in the Greek muſic, as we have already heard was done by Boethius, and further improved by Gregory the Great.

The next ſtep in this improvement is commonly aſcribed to Guido Aretinus, a Benedictin monk, of Aretium in Tuſcany, who, about the year 1024, (tho' there are ſome differences about the year) contrived the uſe of a ſtave of 5 lines, upon which, with its ſpaces he marked his notes, by ſetting points (.) up and down upon them, to denote the riſe and fall of the voice, (but as yet there were no different marks of time;) he marked each line and ſpace at the beginning of the ſtave, with Gregory's 7 letters, and when he ſpake of the notes, he named them by theſe inſtead of the long Greek names of Proſlambanomenos, &c. The Correſpondence of theſe letters to the names of the chords in the Greek ſyſtem being ſettled, the degrees and intervals between any line or ſpace, and any other were hereby underſtood. But this artifice of points and lines was uſed before his time, by whom invented is not known; and this we learn from Kircher, who ſays he found in the Jeſuits library at Meſſina a Greek manuſcript book of hymns, more than 700 years old; in which ſome hymns were written on a ſtave of 8 lines, marked at the beginning with 8 Greek letters; the notes or points were ſet upon the lines, but no uſe made of the ſpaces: Vincenzo Galileo confirms us alſo in this. But whether Guido knew this, is a queſtion; and tho' he did, yet it was well contrived to uſe the ſpaces and lines both, by which the notes lye nearer each other, fewer lines are needful for any interval, and the diſtances of notes are eaſier reckoned.

But there is yet more of Guido's contrivance, which deſerves to be conſidered; Firſt, He contrived the 6 muſical ſyllables, ut, re, mi, fa, ſol, la, which he took out of this latin hymn,

UT queant laxis RE ſonare fibris
MIra geſtorum FAmuli tuorum,
SOLve polluti LAbii reatum,
O pater alme.

In repeating this it came into his mind, by a kind of divine inſtinct ſays Kircher, to apply theſe ſyllables to his notes of muſic: a wonderful contrivance certainly for a divine inſtinct! But let us ſee where the excellency of it lies: Kircher ſays, by them alone he unfolded all the nature of muſic, diſtinguiſhed the tones (or modes) and the ſeats of the ſemitones. Elſewhere he ſays, That by the application of theſe ſyllables he cultivated muſic, and made it fitter for ſinging. In order to know how he applied them, there is another piece of the hiſtory we muſt take along, viz. That finding the Greek Diagram of too ſmall extent, he added 5 more chords or notes in this manner; having applied the letter A to the Proſlambanomenos, and the reſt in order to Nete Hyperbolæon, he added a chord, a Tonus below Proſlam. and called it Hypoproſlambanomenos, and after the Latins g. but commonly marked with the Greek Γ; to ſhew by this, ſome ſay, that the Greeks were the inventors of muſic; but others ſay, he meant to record himſelf (that letter being the firſt in his name) as the improver of muſic; hence the Scale came to be called the Gamm. Above Nete Hyperbolæon he added other 4 chords, which made a new disjunct Tetrachord, he called Hyperhyperbolæon; ſo that his whole Scale contained 20 diatonic notes, (for this was the only Genus now uſed) beſides the b flat, which correſponded to the Trite Synemmenon of the ancients, and made what was afterwards called the ſeries of b molle, as we ſhall hear.

Now the application of theſe ſyllables to the Scale was made thus: Between mi and fa is a ſemitone; ut : re, re : mi, fa : ſol, and ſol : la are tones (without diſtinguiſhing greater and leſſer;) then becauſe there are but 6 ſyllables, and 7 different notes or letters in the 8ve; therefore, to make mi and fa fall upon the true places of the natural ſemitones, ut was applied to different letters, and the reſt of the 6 in order to the others above; the letters to which ut was applied are g. c. f. according to which he diſtinguiſhed three ſeries, viz. that which began with ut in g, and he called it the ſeries of b durum, becauſe b was a whole tone above a; that which began with ut in c was the ſeries of b natural, the ſame as the former; and when ut was in f, it was called b molle, wherein b was only a ſemitone above a. See the whole ſcale in the following ſcheme,

GUIDO's SCALE.

	B.dur	*nat.*	*molle*
e e	*la*	*mi*	
d d	*ſol*	*re*	*la*
c c	*fa*	*ut*	*ſol*
b b	*mi*		
♭♭			*fa*
a a	*re*	*la*	*mi*
g	*ut*	*ſol*	*re*
f		*fa*	*ut*
e	*la*	*mi*	
d	*ſol*	*re*	*la*
c	*fa*	*ut*	*ſol*
b	*mi*		
♭			*fa*
a	*re*	*la*	*mi*
G	*ut*	*ſol*	*re*
F		*fa*	*ut*
E	*la*	*mi*	
D	*ſol*	*re*	
C	*fa*	*ut*	
B	*mi*		
A	*re*		
Γ*amm*	*ut*		

where obſerve, the ſeries of b natural ſtands between the other two, and communicates with both; ſo that to name the chords of the ſcale by theſe ſyllables, if we would have the ſemitones in their natural places, viz. b . c, and e . f, then we apply ut to g, and after la, we go into the ſeries of b natural at fa, and after la of this, we return to the former at mi, and ſo on; or we may begin at ut in c, and paſs into the firſt ſeries at mi, and then back to the other at fa: by which means the one tranſition is a ſemitone, viz. la . fa, and the other a tone la : mi. To follow the order of b molle, we may begin with ut in c or f, and make tranſitions the ſame way as formerly: hence came the barbarous names of Gammut, Are, Bmi, &c. with which the memories of learners uſed to be oppreſſed. But now what a perplexed work is here, with ſo many different ſyllables applied to every chord, and all for no other purpoſe but marking the places of the ſemitones, which the ſimple letters a : b . c, &c. do as well, and with infinite more eaſe. Afterwards ſome contrived better, by making ſeven ſyllables, adding Si in the blanks you ſee in the ſeries between la and ut, ſo that mi-fa and ſi-ut are the two natural ſemitones: Theſe 7 completing the 8ve, they took away the middle ſeries as of no uſe, and ſo ut being in g or f, made the ſeries of B durum (or natural, which is all one) and B molle. But the Engliſh throw out both ut and ſi, and make the other 5 ſerve for all. This wonderful contrivance of Guido's ſix ſyllables, is what a very ingenious man thought fit to call Crux tenellorum ingeniorum; but he might have ſaid it of any of the Methods; for which reaſon, I believe, they are laid aſide with very many, and, I am ſure, ought to be ſo with every body.

But to go on with Guido; the letters he applied to his lines and ſpaces, were called keys, and at firſt he marked every line and ſpace at the beginning of a ſtave with its letter; afterwards marked only the lines, as ſome old examples ſhew; and at laſt marked only one, which was therefore called the ſigned Clef; of which he diſtinguiſhed three different ones, g, c, f; (the three letters he had placed his ut in) and the reaſon of this leads us to another article of the hiſtory, viz. That Guido was the inventor of Symphonetic compoſition, (for if the ancients had it, it was loſt; but this ſhall be conſidered again) the firſt who joined in one harmony ſeveral diſtinct melodies, and brought it even the length of 4 parts, viz. Baſs, Tenor, Counter, and Treble; and therefore to determine the places of the ſeveral Parts in the general ſyſtem, and their relations to one another, it was neceſſary to have 3 different ſigned Clefs.

He is alſo ſaid to be the contriver of thoſe inſtruments they call Polyplectra, as ſpinets and harpſichords: however they may now differ in ſhape, he contrived what is called the Abacus and the Palmulæ, that is, the Machinery by which the ſtring is ſtruck with a Plectrum made of quills Thus far go the improvements of Guido Aretinus, and what is called the Guidonian Syſtem; to explain which he wrote a book he calls his Micrologum.

The next conſiderable improvement was about 300 years after Guido, relating to the Rythmus, and the marks by which the duration of every note was known; for hitherto they had but imitated the ſimplicity of the ancients, and barely followed the quantity of the ſyllables, or perhaps not ſo accurate in that, made all their notes of equal duration, as ſome of the old Eccleſiaſtic muſic is an inſtance of. To produce all the effects muſic is capable of, the neceſſity of notes of different quantity was very obvious; for the Rythmus is the ſoul of muſic; and becauſe the natural quantity of the ſyllables was not thought ſufficient for all the variety of movements, which we know to be ſo agreeable in muſic, therefore about the year 1330 or 1333, ſays Kircher, the famous Joannes de Muris, Doctor at Paris, invented the different figures of notes, which expreſs the time, or length of every note, at leaſt their true relative proportions to one another. Anciently they were called, Maxima, Longa, Brevis, Semibrevis, Minima, Semiminima, Chroma, (or Fuſa) Semichroma. What we call the Demiſemiquaver is of modern addition. But whether all theſe were invented at once is not certain, nor is it probable they were; at firſt 'tis like they uſed only the Longa and Brevis, and the reſt were added by degrees. Now alſo was invented the diviſion of every ſong in ſeparate and diſtinct bars or meaſures. Then for the proportion of theſe notes one to another it was not always the ſame; ſo a Long was in ſome caſes equal to two Breves, ſometimes to three, and ſo of others; and this difference was marked generally at the beginning; and ſometimes by the poſition or way of joining them together in the middle of the ſong; but this variety happened only to the firſt four. Again, reſpecting the mutual proportions of the notes, they had what they called Modes, Prolations and Times: The two laſt were diſtinguiſhed into Perfect and Imperfect; and the firſt into greater and leſſer, and each of theſe into perfect and imperfect: but afterwards they reduced all into 4 modes including the Prolations and Times. I could not think it worth pains to make a tedious deſcription of all theſe, with their marks or ſigns, which you may ſee in the already mentioned Dictionaire de Muſique: I ſhall only obſerve here, That as we now make little uſe of any note above the Semibreve, becauſe indeed the remaining 6 are ſufficient for all purpoſes, ſo we have caſt off that difficulty of various and changeable proportions between the ſame notes: the proportions of 3 to 1 and 2 to 1 was all they wanted, and how much more eaſy and ſimple is it to have one proportion fixt, viz. 2 : 1 (i. e. a Large equal to two Longs, and ſo on in order) and if the proportion of 3 : 1 between two ſucceſſive notes is required, this is, without any manner of confuſion or difficulty, expreſſed by annexing a point (.)

on the right hand of the greateſt of the two notes, as has been above explained; ſo that 'tis almoſt a wonder how the elements of muſic were ſo long involved in theſe perplexities, when a far eaſier way of coming to the ſame end was not very hard to find.

We ſhall obſerve here too, That till theſe notes of various Time were invented, inſtrumental performances without ſong muſt have been very imperfect if they had any; and what a wonderful variety of entertainments we have by this kind of compoſition, I need not tell you.

There remain two other very conſiderable ſteps, before we come to the preſent ſtate of the ſcale of muſic. Guido firſt contrived the joining different parts in one concert, as has been ſaid, yet he carried his ſyſtem no further than 20 diatonic notes: now for the more ſimple and plain compoſitions of the Eccleſiaſtic ſtile, which is probable was the moſt conſiderable application he made of muſic, this extent would afford no little variety; but experience has ſince found it neceſſary to enlarge the ſyſtem even to 36 diatonic notes, which are repreſented in the foremoſt range of keys on the breaſt of a harpſichord; for ſo many are required to produce all that admirable variety of harmony, which the parts in modern compoſitions conſiſt of, according to the many different ſtiles practiſed: but a more conſiderable defect of his ſyſtem is, That except the tone between a and b, which is divided into two ſemitones by ♭ (flat) there was not another tone in all the ſcale divided; and without this the ſyſtem is very imperfect with reſpect to fixed ſounds, becauſe without theſe there can be no right modulation or change from key to key. Therefore the modern ſyſtem has in every 8ve 5 artificial chords or notes, which we mark by the letters of the natural chords, with the diſtinction of ※ or ♭. Obſerve, That by theſe additional chords, we have the diatonic and chromatic Genera of the ancients mixed; ſo that compoſitions may be made in either kind, tho' we reckon the diatonic the true natural ſpecies; and if at any time, two ſemitones are placed immediately in ſucceſſion: for example, if we ſing c . c※ . d, which is done for variety, tho' ſeldom, ſo far this is a mixture of the chromatic; but then to make it pure chromatic, no ſmaller interval can be ſung after two ſemitones aſcending than a Triemitone, nor deſcending leſs than a Tone; becauſe in the pure chromatic ſcale the Spiſſum has always above it a Triemitone, and below it either a Triemitone or a Tone.

The laſt thing I ſhall conſider here is, how the modes were defined in theſe days of improvement; and I find they were generally characteriſed by the ſpecies of 8ve after Ptolomy's manner, and therefore reckoned in all 7. But afterwards they conſidered the harmonical and arithmetical diviſions of the 8ve, whereby it reſolves into a 4th above a 5th, or a 5th above a 4th. And from this they conſtituted 12 modes, making of each 8ve two different modes according to this different diviſion; but becauſe there are two of them that cannot be divided both ways, therefore there are but 12 modes. To be more particular, conſider, in the natural ſyſtem there are 7 different octaves proceeding from theſe 7 letters, a, b, c, d, e, f, g; each of which has two middle chords, which divide it harmonically and arithmetically, except f, which has not a true 4th, (becauſe b is three tones above it, and a 4th is but two tones and a ſemitone) and b, which conſequently wants the true 5th (becauſe f is only two tones and two ſemitones above it, and a true 5th contains three tones and a ſemitone) therefore we have only 5 octaves that are divided both ways, viz. a, c, d, e, g, which makes 10 modes according to theſe different diviſions, and the other two f and b make up the 12. Theſe that are divided harmonically, i. e. with the 5ths loweſt were called authentic, and the other plagal modes. See the following ſcheme.

To theſe modes they gave the names of the ancient Greek tones, as Dorian, Phrygian: but ſeveral authors differ in the application of theſe names, as they do about the order, as, which they ſhall call the firſt and ſecond, &c. which being arbitrary things, as far as I can underſtand, it were as idle to pretend to reconcile

MODES.

Plagal. *Authentic.*
8*ve.* 8*ve.*

4th. *5th.* *4th.*

g --- *c* --- *g* --- *c*
a --- *d* --- *a* --- *d*
b --- *e* --- *b* --- *e*
c --- *f* --- *c* --- *f*
d --- *g* --- *d* --- *g*
e --- *a* --- *e* --- *a*

them, as it was in them to differ about it. The material point is, if we can find it, to know what they meant by theſe diſtinctions, and what was the real uſe of them in muſic; but even here where they ought to have agreed, we find they differed. The beſt account to be given of it is this: They conſidered that an 8ve which wants a 4th or 5th, is imperfect; theſe being the concords next to 8ve, the ſong ought to touch theſe chords moſt frequently and remarkably; and becauſe their concord is different, which makes the melody different, they eſtabliſhed by this two modes in every natural octave, that had a true 4th and 5th: then if the ſong was carried as far as the octave above, it was called a perfect mode; if leſs, as to the 4th or 5th, it was imperfect; if it moved both above and below, it was called a mixt mode: thus ſome authors ſpeak about theſe modes. Others conſidering how indiſpenſable a chord the 5th is in every mode, they took for the final or key-note in the arithmetically divided octaves, not the loweſt chord of that octave, but that very 4th; for example, the octave g is arithmetically divided thus, g - c - g, c is a 4th above the lower g, and a 5th below the upper g, this c therefore they made the final chord of the mode, which therefore properly ſpeaking is c and not g; the only difference then in this method, between the authentic and plagal modes is, that the authentic goes above its final to the octave, the other aſcends a 5th, and deſcends a 4th, which will indeed be attended with different effects, but the mode is eſſentially the ſame, having the ſame final to which all the notes refer. We muſt next conſider wherein the modes of one ſpecies, as authentic or plagal, differ among themſelves: This is either by their ſtanding higher or lower in the ſcale, i. e. the different tenſion of the whole octave; or rather the different Subdiviſion of the octave into its concinnous degrees; there is not another. Let us conſider then whether theſe differences are ſufficient to produce ſo very different effects, as have been aſcribed to them, for example, one is ſaid to be proper for mirth, another for ſadneſs, a third proper to religion, another for tender and amorous ſubjects, and ſo on: whether we are to aſcribe ſuch effects merely to the conſtitution of the octave, without regard to other differences and ingredients in the compoſition of melody, I doubt any body now a days will be abſurd enough to affirm; theſe have their proper differences, 'tis true, but which have ſo little influence, that by the various combinations of other cauſes, one of theſe modes may be uſed to different purpoſes. The greateſt and moſt influencing difference is that of theſe octaves, which have the 3d l. or 3d g. making what is above called the ſharp and flat key: but we are to notice, that of all the 8ves, except c and a, none of them have all their eſſential chords in juſt proportion, unleſs we neglect the difference of tone greater and leſſer, and alſo allow the ſemitone to ſtand next the fundamental in ſome flat keys (which may be uſeful, and is ſometimes uſed;) and when that is done, the octaves that have a flat 3d will want the 6th g. and 7th g. which are very neceſſary on ſome occaſions; and therefore the artificial notes ※ and ♭ are of abſolute uſe to perfect the ſyſtem. Again, if the modes depend upon the ſpecies of 8ves, how can they be more than 7? And as to this diſtinction of authentic and plagal, I have ſhewn that it is imaginary, with reſpect to any eſſential difference conſtituted hereby in the kind of the melody; for tho' the carrying the ſong above or below the final, may have a different effect, yet this is to be numbered among the other cauſes, and not aſcribed to the conſtitution of the octaves. But 'tis particularly to be remarked, that theſe authors who give us examples in actual compoſition of their 12 modes, frequently take in the artificial notes ※ and ♭ to perfect the melody of their key; and by this means depart from the conſtitution of the 8ve, as it ſtands in the fixt natural ſyſtem. So we can find little certain and conſiſtent in their way of ſpeaking about theſe things; and their modes are all reducible to two, viz. the ſharp and flat; other differences reſpecting only the place of the ſcale where the fundamental is taken : I conclude therefore that the true theory of modes, is where they are diſtinguiſhed into two ſpecies, ſharp and flat, whoſe effects muſt be allowed are different ; but other cauſes muſt concur to any remarkable effect ; and therefore 'tis unreaſonable to talk as if all were owing to any one thing. What they called the ſeries of b molle, was no more than this, That becauſe the 8ve f had a 4th above at b, exceſſive by a ſemitone, and conſequently the 8ve b had a 5th above as much deficient, therefore this artificial note b flat or ♭, ſerved them to tranſpoſe their modes to the diſtance of a 4th or 5th, above or below ; for taking ♭ a ſemitone above a, the reſt keeping their ratios already fixt, the ſeries proceeding from c with b natural (i. e. a tone above a) is in the ſame order of degrees, as that from f with b flat (i. e. ♭ a ſemitone above a ;) but f is a 4th above c, or a 5th below ; therefore to tranſpoſe from the ſeries of b natural to b molle we aſcend a 4th or deſcend a 5th ; and contrarily from b molle to the other : This is the whole myſtery ; but they never ſpeak of the other tranſpoſitions that may be made by other artificial notes.

You may alſo obſerve, that what they called the eccleſiaſtic tones, are no other than certain notes in the organ which are made the final or fundamental of the hymns ; and as modes they differ, ſome by their place in the ſcale, others by the ſharp and flat 3d ; but even here every author ſpeaks not the ſame way : 'tis enough we know they can differ no other way, or at leaſt all their differences can be reduced to theſe. At firſt they were four in number, whoſe finals were d, e, f, g, conſtituted authentically : this choice, we are told, was firſt made by St. Ambroſe, biſhop of Milan ; and for being thus choſen and approved, they pretend the name authentic was added : afterwards Gregory the Great added four plagals, a, b, c, d, whoſe finals are the very ſame with the firſt four, and in effect are only a continuation of theſe to the 4th below ; and for this connection with them were called plagal, tho' the derivation of the word is not ſo plain.

The

The Ancient and Modern Muſic compared.

THE laſt age was famous for the war that was raiſed, and eagerly maintained by two different parties, concerning the ancient and modern genius and learning. Among the diſputed points muſic was one. I know of nothing new to be advanced on either ſide.

The queſtion in general is, Whether the ancients or the moderns beſt underſtood and practiſed muſic? Some affirm, that the ancient art of muſic is quite loſt, among other valuable things of antiquity, vid. Pancirollus, de Muſica. Others pretend, That the true ſcience of harmony is arrived to much greater perfection than what was known or practiſed among the ancients. The fault with many of the contenders on this point is, that they fight at long weapons; I mean they keep the argument in generals, by which they make little more of it than ſome innocent harangues and flouriſhes of rhetorick, or at moſt make bold aſſertions upon the authority of ſome miſapplied expreſſions and incredible ſtories of ancient writers, for I am now ſpeaking chiefly of the patrons of the ancient muſic.

If Sir William Temple was indeed ſerious, and had any thing elſe in his view, but to ſhew how he could declaim, he is a notable inſtance of this. Says he, "What are become of the charms of muſic, by which "men and beaſts were ſo frequently inchanted, and "their very natures changed; by which the paſſions "of men were raiſed to the greateſt height and vio"lence, and then as ſuddenly appeaſed, ſo as they "might be juſtly ſaid, to be turned into lions or lambs, "into wolves or into harts, by the power and charms "of this admirable art?" And he might have added too, by which the trees and ſtones were animated; in ſpite of the ſenſe which Horace puts upon the ſtories of Orpheus and Amphion. But this queſtion ſhall be conſidered preſently. Again he ſays. "'Tis agreed "by the learned, that the ſcience of muſic, ſo admired "of the ancients, is wholly loſt in the world, and "that what we have now, is made up out of certain "notes that fell into the fancy or obſervation of a "poor fryar, in chanting his mattins. So that thoſe "two divine excellencies of muſic and poetry, are "grown in a manner, but the one fiddling and the "other rhyming, and are indeed very worthy the ig-"norance of the friar, and the barbarouſneſs of the "Goths that introduced them among us." Some learned men indeed have ſaid ſo; but as learned have ſaid otherwiſe: And for the deſcription Sir William gives of the modern muſic, it is the pooreſt thing ever was ſaid, and demonſtrates the author's utter ignorance of muſic: Did he know what uſe Guido made of theſe notes? He means the ſyllables, ut, re, mi, &c. for theſe are the notes he invented. If the modern muſic falls ſhort of the ancient, it muſt be in the uſe and application; for the materials and principles of harmony are the ſame thing, or rather they are improved; for Guido's ſcale to which he applied theſe ſyllables, is the ancient Greek ſcale only carried to a greater extent; and which is much improved ſince.

As I have ſtated the queſtion, we are firſt to compare the principles and then the practice.

Meibomius, no enemy to the ancient cauſe, ſpeaking of Ariſtides, calls him, Incomparabilis antiquæ muſicæ Auctor, & vere exemplar unicum, who, he ſays, has taught and explained all that was ever known or taught before him, in all the parts. We have Ariſtoxenus; and for what was written before him, he affirms to have been very deficient: nor do the later writers ever complain of the loſs of any valuable author that was before them.

Now we may ſuppoſe it will be manifeſt to the unprejudiced, who conſider what has been explained both of the ancient and modern principles and theory of harmonics, that they have not known more of it than we do, plainly becauſe we know all theirs; and that we have improved upon their foundation, will be as plain, from the accounts I have given of both, and the compariſon I have drawn all along in explaining the ancient theory; therefore I need inſiſt no more upon this part. The great diſpute is about the practice.

To underſtand the ancient practice of muſic, we are firſt to conſider what the name ſignified with them. Muſic included theſe three things, harmony, rythmus, and verſe: if there needs any thing to be added, take theſe few authorities. In Plato's firſt Alcibiades, Socrates aſks what he calls that art which teaches to ſing, play on the harp, and dance? and makes him anſwer, Muſic: But ſinging among them was never without verſe. This is again confirmed by Plutarch, who ſays, "That in judging of the parts of muſic, reaſon and ſenſe muſt be employed: for theſe three muſt always meet in our hearing, viz. Sound, whereby we perceive harmony; Time, whereby we perceive Rythmus; and Letters or Syllables, by which we underſtand what is ſaid." Therefore we reaſonably conclude, that their muſic conſiſted of verſes ſung by one or more voices, alternately, or in choirs; ſometimes with the ſound of inſtruments, and ſometimes by voices only; and whether they had any muſic without ſinging, ſhall again be conſidered.

Let us now conſider what idea their writers give us of the practical muſic. This we may expect, if 'tis to be found at all, from the authors who write ex profeſſo upon muſic, and pretend to explain it in all its parts. I have already ſhewn, that they make the muſical faculties (as they call them) theſe, viz. Melopœia, Rythmopœia, and Poeſis. For the firſt, to make the compariſon right, it ſhall be conſidered under theſe two heads, Melody and Symphony, and begin with the laſt. It has been obſerved, in explaining the principles of the ancient Melopœia, that it contains nothing but what relates to the conduct of a ſingle voice, or making what we call melody: there is not the leaſt word of the concert or harmony of parts; from which there is very great reaſon to conclude, that this was no part of the ancient practice, and is altogether a modern invention, and a noble one too; the firſt rudiments of which has been already ſaid we owe to that ſame poor fryar (as Sir William Temple calls him) Guido Aretinus. But that there be no difference about mere words, obſerve, that the queſtion is not, Whether the ancients ever joined more voices or inſtruments together in one Symphony; but, whether ſeveral voices were joined, ſo as each had a diſtinct and proper melody, which made among them a ſucceſſion of various Concords; and were not in every note Uniſons, or at the ſame diſtance from each other, as 8ves? which laſt will agree to the general ſignification of the word Symphonia; yet 'tis plain, that in ſuch caſes there is but one ſong, and all the voices perform the ſame individual melody; but when the parts differ, not by the tenſion of the whole, but by the different relations of the ſucceſſive notes, This is the modern art that requires ſo peculiar a genius, and good judgment, in which therefore 'tis ſo difficult to ſucceed well. The ancient harmonic writers, in their rules and explications of the Melopœia, ſpeak nothing of this art: They tell us, that the Melopœia is the art of making ſongs; or more generally, that it is the uſe of all the parts and principles that are the ſubjects of harmonical contemplation. Now is it at all probable, that ſo conſiderable an uſe of theſe principles was known among the ancients, and yet never once mentioned by thoſe who profeſſed to write of Muſic in all its parts? Shall we think theſe concealed it, becauſe they envied poſterity ſo valuable an art? Or, was it the difficulty of explaining it that made them ſilent? They might at leaſt have ſaid there was ſuch an art; the definition of it is eaſy enough: Is it like the reſt of their conduct to neglect any thing that might redound in any degree to their own praiſe and glory? Since we find no notice of this art under the Melopœia, it cannot be expected in any other part. If any body ſhould think to find it in the part that treats of ſyſtems, becauſe that expreſſes a compoſition of ſeveral things, they will be diſappointed: for theſe authors have conſidered ſyſtems only as greater intervals between whoſe extremes other notes are placed, dividing them into leſſer intervals, in ſuch a manner as a ſingle voice may paſs agreeably from the one extreme to the other. But in diſtinguiſhing ſyſtems, they tell us, ſome are conſonant, ſome diſſonant: Which names expreſſed the quality of theſe ſyſtems, viz. that of the firſt, the extremes are fit to be heard together, and the other not; and if they were not uſed in conſonance, may ſome ſay, theſe names are wrong applied: but tho' they ſignified that quality, it will not prove they were uſed in conſonance, at leaſt in the modern way : Beſides, when they ſpeak plainly and expreſſly of their uſe in ſucceſſion or melody, they uſe the ſame names, to ſignify their agreement : And if they were uſed in conſonance in the manner deſcribed, why have we not at leaſt ſome general rules to guide us in the practice ? Or rather, does not their ſilence in this, demonſtrate there was no ſuch practice ? But tho' there is nothing to be found in thoſe who have written more fully and expreſſly on muſic, yet the advocates for the ancient muſic find demonſtration enough, they think, in ſome paſſages of authors that have given tranſient deſcriptions of muſic : but if theſe paſſages are capable of any other good ſenſe than they put upon them, the ſilence of the profeſſed writers on muſic will undoubtedly caſt the balance on that ſide. Ariſtotle in his Treatiſe concerning the World, anſwers that queſtion, If the world is made of contrary principles, how comes it that it is not long ago diſſolved ? He ſhews, that the beauty and perfection of it conſiſts in the admirable mixture and temperament of different things ; and among his illuſtrations brings in muſic thus, Muſic, by a mixture of acute and grave, alſo of long and ſhort ſounds of different voices, yields one abſolute or perfect concert. Again, explaining the harmony of the celeſtial motions, where each orb, ſays he, has its own proper motion, yet all tend to one harmonious end, as they alſo proceed from one principle, making a choir in the heavens by their concord, and he carries on the compariſon with muſic thus : As in a choir, after the Præcentor the whole choir ſings, compoſed ſometimes of men and women, who by the different acuteneſs and gravity of their voices, make one concinnous harmony.

Let Seneca appear next. Don't you ſee of how many voices the chorus conſiſts ? yet they make but one ſound : in it ſome are acute, ſome grave, and ſome middle : women are joined with men, and whiſtles alſo put in among them : each ſingle voice is concealed, yet the whole is manifeſt.

Caſſiodorus ſays, Symphony is an adjuſtment of a grave ſound to an acute, or an acute to a grave, making melody.

Now the moſt that can be made of theſe paſſages is, That the ancients uſed choirs of ſeveral voices differing in acuteneſs and gravity; which was never denied: But the whole of theſe definitions will be fully anſwered, ſuppoſing they ſung all the ſame part or ſong only in different tenſions, as 8ve in every note. And from what was premiſed, I think there is reaſon to believe this to be the only true meaning.

But there are other conſiderable things to be ſaid that will put this queſtion beyond all reaſonable doubt. The word harmonia ſignifies more generally the agreement of ſeveral things that make up one whole; but ſo do ſeveral ſounds in ſucceſſion make up one ſong, which is in a very proper ſenſe, a compoſition. And in this ſenſe we have in Plato and others ſeveral compariſons to the harmony of ſounds in muſic. But 'tis alſo uſed in the ſtrict ſenſe for conſonance, and ſo is equivalent to the word Symphonia. Now we ſhall make Ariſtotle clear his own meaning in the paſſages adduced: he uſes Symphonia to expreſs two kinds of conſonance; the one, which he calls by the general name Symphonia, is the conſonance of two voices that are in every note uniſon; and the other, which he calls Antiphonia, of two voices that are in every note 8ve: In his Problems, § 19. Prob. 16. He aſks why Symphonia is not as agreeable as Antiphonia; and anſwers, becauſe in Symphonia the one voice being altogether like or as one with the other, they eclipſe one another. The Symphoni here plainly muſt ſignify uniſons, and he explains it elſewhere by calling them Omophoni: and that the 8ve is the Antiphoni is plain, for it was a common name to 8ve; and Ariſtotle himſelf explains the Antiphoni by the voice of a boy and a man that are as Nete and Hypate, which were 8ve in Pythagoras's lyre. Again, I own he is not ſpeaking here of uniſon and 8ve ſimply conſidered, but as uſed in ſong; and tho' in modern Symphonies it is alſo true, that uniſon cannot be ſo frequently uſed with as good effect as 8ve, yet his meaning is plainly this, viz. that when two voices ſing together one ſong, 'tis more agreeable that they be 8ve than uniſon with one another, in every note: this I prove from the 17th Probl. in which he aſks why Diapente and Diateſſaron are never ſung as the Antiphoni? He anſwers, becauſe the Antiphoni, or ſounds of 8ve, are in a manner both the ſame and different voices; and by this likeneſs, where at the ſame time each keeps its own diſtinct character, we are better pleaſed: therefore he affirms, that the 8ve can only be ſung in Symphony. Now that by this he means ſuch a Symphony is certain, becauſe in modern counterpoint the 4th, and eſpecially the 5th, are indiſpenſable; and indeed the 5th with its two 3ds, are the life of the whole. Again, in Probl. 18. he aſks why the Diapaſon only is magadiſed? And anſwers, becauſe its terms are the only Antiphoni: now that this ſignifies a manner of ſinging, where the ſounds are in every note 8ve to one another, is plain, from this word magadiſed, taken from the name of an inſtrument, in which two ſtrings were always ſtruck together for one note. Athenæus makes the Magadis the ſame with the Barbiton and Pectis; and Horace makes the muſe Polyhymnia the inventor of the Barbiton.—Nec Polyhymnia Leſboum refugit tendere Barbiton.—And from the nature of this inſtrument, that it had two ſtrings to every note, ſome think it probable the name Polyhymnia was deduced. Athenæus reports from Anacreon, that the Magadis had twenty chords; which is a number ſufficient to make us allow they were doubled; ſo that it had in all ten notes: now anciently they had but three tones or modes, and each extended only to an 8ve, and being a tone aſunder, required preciſely ten chords; therefore Athenæus corrects Poſſidonius for ſaying the twenty chords were all diſtinct notes, and neceſſary for the three modes. But he further confirms this point by a citation from the comic poet Alexandrides, who takes a compariſon from the Magadis, and ſays, I am like the Magadis, about to make you underſtand a thing that is at the ſame time both ſublime and low; which proves that two ſtrings were ſtruck together, and that they were not uniſon. He reports alſo the opinion of the poet Jon, that the Magadis conſiſted of two flutes, which were both ſounded together. From all this 'tis plain, That by magadiſed, Ariſtotle means ſuch a conſonance of ſounds as to be in every note at the ſame diſtance, and conſequently to be without Symphony and parts according to the modern practice. Athenæus reports alſo of Pindar, that he called the muſic ſung by a boy and a man, Magadis; becauſe they ſung together the ſame ſong in two modes. Mr. Perault concludes from this, that the ſtrings of the Magadis were ſometimes 3ds, becauſe Ariſtotle ſays, the 4th and 5th are never magadiſed: but why may not Pindar mean that they were at an 8ve's diſtance; for certainly Ariſtotle uſed that compariſon of a boy and a man to expreſs an 8ve: Mr. Perault thinks it muſt be a 3d, becauſe of the word mode, whereof anciently there were but three; and confirms it by a paſſage out of Horace, Epod. 9. Sonante miſtum tibiis carmen lyra; hac Dorium illis Barbarum: by the Barbarum, ſays he, is to be underſtood, the Lydian, which was a Ditone above the Dorian: but the difficulty is, that the ancients reckoned the Ditone at beſt a concinnous Diſcord; and therefore 'tis not probable they would uſe it in ſo remarkable a manner: but we have enough of this. The author laſt named obſerves, that the ancients probably had a kind of ſimple harmony, in which two or three notes were tuned to the principal chords of the key, and accompanied the ſong. This he thinks probable from the name of an inſtrument Pandora that Athenæus mentions; which is likely the ſame with the Mandora, an inſtrument not very long ago uſed, ſays he, in which there were four ſtrings, whereof one ſerved for the ſong, and was ſtruck by a Plectrum or quill tied to the fore-finger: the other three were tuned ſo as two of them were an 8ve, and the other a middle, dividing the 8ve into a 4th and 5th: they were ſtruck by the thumb, and this regulated by the rythmus or meaſure of the ſong, i. e. Four ſtrokes for every meaſure of common time, and three for triple. He thinks Horace points out the manner of this inſtrument in Ode 6. Leſbium ſervate pedem, meique pollicis ictum, which he thus tranſlates. Take notice, you who would join your voice to the ſound of my lyre, that the meaſure of my ſong is ſapphic, which the ſtriking of my thumb marks out to you. This inſtrument is parallel to our common bagpipe.

The paſſages of Ariſtotle being thus cleared, Seneca and Caſſiodorus may be eaſily given up. Seneca ſpeaks of vox media, as well as acuta and gravis; but this can ſignify nothing, but that there might be two 8ves, one between the men and women, and the ſhrill tibiæ might be 8ve above the women: but then the latter part of what he ſays, deſtroys their cauſe; for ſingulorum voces latent, can very well be ſaid of ſuch as ſing the ſame melody uniſon or octave, but would by no means be true of ſeveral voices performing a modern Symphony, where every part is conſpicuous, with a perfect harmony in the whole. For Caſſiodorus, what he ſays has no relation to conſonance, An adjuſtment of a grave ſound to an acute, or an acute to a grave making melody: if it be alledged that temperamentum may ſignify a mixture, it muſt be allowed; but then he ought to have ſaid, Temperamentum ſonitus gravis & acuti; for what means ſonitus gravis ad acutum, and again acuti ad gravem? But in the other caſe, this is well enough, for he means, That melody may conſiſt either in a progreſs from acute to grave, or contrarily; and then the word modulamen was never applied any other way than to ſucceſſive ſounds. There is another paſſage which Iſ. Voſſius cites from Ælian the Platonic, where he ſays, Symphony conſiſts of two or more ſounds differing in acuteneſs and gravity, with the ſame cadence and temperament: but this rather adds another proof that what Symphonies they had were only of ſeveral voices ſinging the ſame melody only in a different tone.

After ſuch evident demonſtrations, there needs no more to be ſaid to prove, that Symphonies of different parts are a modern improvement. From their rejecting the 3ds and 6ths out of the number of concords, the ſmall extent of their ſyſtem being only two octaves, and having no tone divided but that between Meſe and Parameſe, we might argue that they had no different parts: for tho' ſome ſimple compoſitions of parts might be contrived with theſe principles, yet 'tis hard to think they would lay the foundations of that practice, and carry it no further; and much harder to believe, they would never ſpeak one word of ſuch an art and practice, where they profeſs to explain all the parts of muſic. But for the ſymphonies, which we allow them to have had, you will aſk why theſe writers don't ſpeak of them, and why it ſeems ſo incredible that they ſhould have had the other kind without being ever mentioned, when they don't mention theſe we allow? The reaſon is plain, becauſe the muſician's buſineſs was only to compoſe the melody, and therefore they wanted only rules about that; but there was no rule required to teach how ſeveral voices may join in the ſame ſong, for there is no art in it: experience taught them that this might be done in uniſon or octave; and pray what had the writers more to ſay about it? But the modern ſymphony is a quite different thing, and needs much to be explained both by rules and examples. But 'tis time to make an end of this point: there is only to be added, that if plain reaſon needs any authority to ſupport it, there can be adduced many moderns of character, who make no doubt to ſay, that after all their pains to know the true ſtate of the ancient muſic, they could not find the leaſt ground to believe there was any ſuch thing in theſe days, as muſic in parts. Perrault has been named, and ſhall only add to him Kircher and Doctor Wallis, authors of great capacity and infinite induſtry.

Our next compariſon ſhall be of the melody of the ancients and moderns; and here comes in what's neceſſary to be ſaid on the other parts of muſic, viz. the rythmus and verſe. In order to this compariſon, melody ſhall be diſtinguiſhed into vocal and inſtrumental. By the firſt, is meant muſic ſet to words, eſpecially verſes; and by the other, muſic compoſed only for inſtruments without ſinging. For the vocal you ſee by the definition that poetry makes a neceſſary part of it: this was not only of ancient practice, but the chief, if not their only practice, as appears from their definitions of muſic already explained. ’Tis not to be expected that there ſhould be any compariſon made of the ancient and modern poetry; ’tis enough to obſerve, That there are admirable performances in both; and if we come ſhort of them, ’tis not for want either of genius or application: but perhaps we ſhall be obliged to own, that the Greek and Latin languages were better contrived for pleaſing the ear. We are next to conſider, that the rythmus of their vocal muſic was only that of the poetry, depending altogether on the verſe, and had no other forms or variety than what the metrical art afforded: under the head of mutations, thoſe who conſider the rythmus make the changes of it no other than from one kind of metrum or verſe to another, as from jambick to choraick: and we may notice too, That in the more general ſenſe, the rythmus includes alſo, their dancings, and all the theatrical action. It is to be imagined therefore, that their vocal muſic conſiſted of verſes, ſet to muſical tones, and ſung by one or more voices in choirs or alternately; ſometimes with and alſo without the accompaniment of inſtruments: to which we may add, from the laſt article, That their ſymphonies conſiſted only of ſeveral voices performing the ſame ſong in different tones as uniſon and octave. For inſtrumental muſic, ’tis not ſo very plain that they uſed any: and if they did, ’tis more than probable the rythmus was only an imitation of the poetical numbers, and conſiſted of no other meaſures than what were taken from the variety and kinds of their verſes; of which they pretended a ſufficient variety for expreſſing any ſubject according to its nature and property: and ſince the chief deſign of their muſic ſeems to have been to move the heart and paſſions, they needed no other rythmus. It cannot be denied, that there are many paſſages which fairly inſinuate their practice upon inſtruments without ſinging; ſo Athenæus ſays, The Synaulia was a conteſt of pipes performing alternately without ſinging, And Quintilian hath this expreſſion, If the numbers and airs of muſic have ſuch a virtue, how much more ought eloquent words to have? That is to ſay, the other has virtue or power to move us, without reſpect to the words. But if they had any rythmus for inſtrumental performances, which was different from that of their poetical meaſures, how comes it to paſs that thoſe authors who have been ſo full in explaining the ſigns by which their notes of muſic were repreſented, ſpeak not a word of the ſigns of time for inſtruments? Whatever be in this, it muſt be owned that ſinging with words was the moſt ancient practice of muſic, and the practice of their more ſolemn and perfect entertainments, as appears from all the inſtances above adduced, to prove the ancient uſe and eſteem of muſic: and that it was the univerſal and common practice, even with the vulgar, appears by the paſtoral dialogues of the poets, where the conteſt is ordinarily about their ſkill in muſic, and chiefly in ſinging.

Let us next conſider what the preſent practice (among Europeans at leaſt) conſiſts of. We have, firſt, vocal muſic; and this differs from the ancient in theſe reſpects, viz. That the conſtitution of the rythmus is different from that of the verſe, ſo far, that in ſetting muſic to words, the thing principally minded is, to accommodate the long and ſhort notes to the ſyllables in ſuch manner as the words may be well ſeparated, and the accented ſyllable of every word ſo conſpicuous, that what is ſung may be diſtinctly underſtood: the movement and meaſure is alſo ſuited to the different ſubjects, for which the variety of notes, and the conſtitutions or modes of time afford ſufficient means. Then we differ from the ancients in our inſtrumental accompaniments, which compoſe ſymphonies with the voice, ſome in uniſon, others making a diſtinct melody; which produces a raviſhing entertainment they were not bleſt with, or at leaſt without which we ſhould think ours imperfect. Then there is a delightful mixture of pure inſtrumental ſymphonies, performed alternately with the ſong. Laſtly, We have compoſitions fitted altogether for inſtruments: the deſign whereof is not ſo much to move the paſſions, as to entertain the mind and pleaſe the fancy with a variety of harmony and rythmus; the principal effect of which is to raiſe delight and admiration. This is the plain ſtate of the ancient and modern muſic, in reſpect of practice: but to determine which of them is moſt perfect, will not perhaps be ſo eaſily done to ſatisfy every body. Tho' we believe their's to have been excellent in its kind, and to have had noble effects; this will not pleaſe ſome, unleſs we acknowledge ours to be barbarous, and altogether ineffectual. The effects are indeed the true arguments; but how ſhall we compare theſe, when there remain no examples of ancient compoſition to judge by? ſo that the defenders of the ancient muſic admire a thing they don't know; and in all probability judge not of the modern by their perſonal acquaintance with it, but by their fondneſs for their own notions. Thoſe who ſtudy our muſic, and have well tuned ears, can bear witneſs to its noble effects: yet perhaps it will be replied, That this proceeds from a bad taſte, and ſomething natural, in applauding the beſt thing we know of any kind. But let any body produce a better, and we ſhall heartily applaud it. They bid us bring back the ancient muſicians, and then they will effectually ſhew us the difference; and we bid them learn to underſtand the modern muſic, and believe their own ſenſes: in ſhort, we think we have better reaſon to determine in our own favours, from the effects we actually feel, than any body can have from a thing they have no experience of, and can pretend to know no other way than by report: but we ſhall conſider the pretences of each party a little nearer. It has been already obſerved, that the principal end the ancients propoſed in their muſic, was to move the paſſions; and to this purpoſe poetry was a neceſſary ingredient. We have no diſpute about the power of poetical compoſitions to affect the heart, and move the paſſions, by ſuch a ſtrong and lively repreſentation of their proper objects, as that noble heart is capable of: the poetry of the ancients we own is admirable; and their verſes being ſung with harmonious cadances and modulations, by a clear and ſweet voice, ſupported by the agreeable ſound of ſome inſtrument, in ſuch manner that the hearer underſtood every word that was ſaid, which was all delivered with a proper action, that is, pronunciation and geſtures ſuitable to, or expreſſive of the ſubject, as we alſo ſuppoſe the kind of verſe, and the modulation applied to it was; taking their vocal muſic in this view, we make no doubt that it had admirable effects in exciting love, pity, anger, grief, or any thing elſe the poet had a mind to: but then they muſt be allowed to affirm, who pretend to have the experience of it, That the modern muſic, taking it in the ſame ſenſe, has all theſe effects. Whatever truth may be in it, we ſhall paſs what Doctor Wallis alledges, viz. That theſe ancient effects were moſt remarkably produced upon ruſtics, and at a time when muſic was new, or a very rare thing: but it muſt be obſerved with him, That the paſſions are eaſily wrought upon. The deliberate reading of a romance well written will produce tears, joy, or indignation, if one gives his imaginations a looſe; but much more powerfully when attended with the things mentioned: ſo that it can't be thought ſo very myſterious and wonderful an art to excite paſſion, as that it ſhould be quite loſt. Our poets are capable to expreſs any moving ſtory in a very pathetic manner: our muſicians too know how to apply a ſuitable modulation and rythmus: and we have thoſe who can put the whole in execution; ſo that a heart capable of being moved will be forced to own the wonderful power of modern muſic: the Italian and Engliſh theatres afford ſufficient proof of this; ſo that it is to be believed, were we to collect examples of the effects that the acting of modern tragedies and operas have produced, there would be no reaſon to ſay we had loſt the art of exciting paſſion. But 'tis needleſs to inſiſt on a thing which ſo many know by their own experience. If ſome are obſtinate to affirm, That we are ſtill behind the ancients in this art, becauſe they have never felt ſuch effects of it; we will aſk them if they think every temper and mind among the ancients was equally diſpoſed to reliſh, and be moved by the ſame things? If tempers differed then, why may they not now, and yet the art be at leaſt, as powerful as ever? Again, have we not as good reaſon to believe thoſe who affirm they feel this influence, as you who ſay you have never experienced it? And if you put the matter altogether upon the authority of others, pray, is not the teſtimony of the living for the one, as good as that of the dead for the other?

But ſtill there are wonders pretended to have been performed by the ancient muſic, which we can produce nothing like; ſuch as thoſe amazing tranſports of mind, and hurrying of men from one paſſion to another, all on a ſudden, like the moving of a machine, of which we have ſo many examples in hiſtory. For theſe we ſhall anſwer, That what is reckoned incredible in them may juſtly be laid upon the hiſtorians, who frequently aggravate things beyond what's ſtrictly true, or even their credulity in receiving them upon weak grounds; and moſt of theſe ſtories are delivered to us by writers who were not themſelves witneſſes of them, and had them only by tradition and common report. If nothing like this had ever been juſtly objected to the ancient hiſtorians, we might think ourſelves obliged to find another anſwer: but ſince 'tis ſo, we may be allowed to doubt of theſe facts, or ſuſpect at leaſt that they are in a great degree hyperbolical. Conſider but the circumſtances of ſome of them as they are told, and if they are literally true, and can be accounted for no other way but by the power of ſound, it muſt be owned they had an art which is loſt: for example, the quelling of a ſedition. Let us repreſent to ourſelves a furious rabble, envenomed with diſcontent, and enraged with oppreſſion; or let the grounds of their rebellion be as imaginary as you pleaſe, ſtill we muſt conſider them as all in a flame; ſuppoſe next, they are attacked by a ſkilful muſician, who addreſſes them with his pipe or lyre; how likely is it that he ſhould perſuade them by a ſong to return to their obedience, and lay down their arms? Or rather, how probable is it that he may be torn to pieces, as a ſolemn mocker of their juſt reſentment? But that there may be allowed ſome foundation for ſuch a ſtory, we will ſuppoſe a man of great authority for virtue, wiſdom, and the love of mankind, comes to offer his humble and affectionate advice to ſuch a company; we will ſuppoſe too, he delivers it in verſe, and perhaps ſings it to the ſound of his lyre, (which ſeems to have been a common way of delivering public exhortations in more ancient times, the muſic being uſed as a means to gain their attention,) it cannot be thought impoſſible that this man may perſuade them to peace, by repreſenting the danger they run, aggravating the miſchief they are like to bring upon themſelves and the ſociety, or alſo correcting the falſe views they may have had of things. But then will any body ſay, all this is the proper effect of muſic, unleſs reaſoning be alſo a part of it? And muſt this be an example of the perfection of the ancient art, and its preference to ours? In the ſame manner may other inſtances alledged be accounted for, ſuch as Pythagoras's diverting a young man from the execution of a wicked deſign, the reconcilement of two inveterate enemies, the curing of Clytemneſtra's vicious inclinations, &c. Horace's explication of the ſtories of Orpheus and Amphion, makes it probable we ought to explain all the reſt the ſame way. For the ſtory of Timotheus and Alexander, as commonly repreſented, it is indeed a very wonderful one, but we muſt here allow ſomething to the boldneſs or credulity of the hiſtorian: That Timotheus, by ſinging to his lyre, with moving geſture and pronunciation, a well compoſed poem of the atchievements of ſome renowned hero, as Achilles, might awaken Alexander's natural paſſion for warlike glory, and make him expreſs his ſatisfaction with the entertainment in a remarkable manner, is in no wiſe incredible: we are to conſider too the fondneſs he had for the Iliad, which would diſpoſe him to be moved with any particular ſtory out of that: but how he ſhould forget himſelf ſo far, as to commit violence on his beſt friend, is not ſo eaſily accounted for, unleſs we ſuppoſe him at that time as much under the power of Bacchus as of the muſes: and that a ſofter theme ſung with equal art, ſhould pleaſe a hero who was not inſenſible of Venus's influences, is no myſtery, eſpecially when his miſtreſs was in company: but there is nothing here above the power of modern poetry and muſic, where it meets with a ſubject the ſame way diſpoſed, to be wrought upon. To make an end of this, the hiſtorians, by ſaying too much, have given us ground to believe very little. What do you think of curing a raging peſtilence by muſic?

For curing the bites of ſerpents, we cannot ſo much doubt it, ſince that of the Tarantula has been cured in Italy. But then they have no advantage in this inſtance: and we muſt mind too, that this cure is not performed by exquiſite art and ſkill in muſic; it does not require a Correlli or Valentini, but is performed by ſtrains diſcovered by random trials without any rule: and this will ſerve for an anſwer to all that's alledged of the cure of diſeaſes by the ancient muſic.

'Tis time to bring this compariſon to an end; and after what's explained, it muſt be owned, that the ſtate of muſic is much more perfect now than it was among the ancient Greeks and Romans. The art of muſic, and the true ſcience of harmony in ſounds is greatly improved. Their muſic has been allowed (including poetry and the theatrical action) to have been very moving; but at the ſame time it muſt be ſaid, their melody has been a very ſimple thing, as their ſyſtem or ſcale plainly ſhews.

And the confining all their rythmus to the poetical numbers, is another proof of it, and ſhews that there has been little air in their muſic; which by this appears to have been only of the recitative kind, that is, only a more muſical ſpeaking, or modulated elocution; the character of which is to come near nature, and be only an improvement of the natural accents of words by more pathetic or emphatical tones; the ſubject whereof may be either verſe or proſe. And as to their inſtruments of muſic, for any thing that appears certain and plain to us, they have been very ſimple. Indeed the public laws in Greece gave check to the improvement of the art of harmony, becauſe they forbade all innovations in the primitive ſimple muſic; of which there are abundance of teſtimonies. Plato ſays, in his Treatiſe of the Laws, viz. That they entertained not in the city the makers of ſuch inſtruments as have many ſtrings, as the Trigonus and Pectis; but the Lyra and Cithara they uſed, and allowed alſo ſome ſimple Fiſtulæ in the country. But 'tis certain, that primitive ſimplicity was altered; ſo that from a very few ſtrings, they uſed a great number: but there is much uncertainty about the uſe of them, as whether it was for mixing their modes, and the genera, or for ſtriking two chords together as in the magadis. Since inſtruments have been mentioned, two things muſt be obſerved, firſt, That they pretend to have had tibiæ of different kinds, whoſe ſpecific ſounds were excellently choſen for expreſſing different ſubjects. Then, there is a deſcription of the Organum hydraulicum in Tertullian, which ſome adduce to prove how perfect their inſtruments were.—Specta portentoſam Archimedis munificentiam; organum hydraulicum dico, tot membra, tot partes, tot compagines, tot itinera vocum, tot compendia ſonorum, tot commercia modorum, tot acies tibiarum, & una moles erunt omnia. But it will not be pretended to have been more perfect than our modern organs: And what have they to compare of the ſtringed kind, with our harpſichords; and all the inſtruments that are ſtruck with a bow?

After all, if our melody or ſongs are only equal to the ancients, it is to be hoped, the art of muſic is not loſt as ſome pretend. But then, what an improvement in the knowledge of pure harmony has been made, ſince the introduction of the modern ſymphonies? Here it is, that the mind is raviſhed with the agreement of things ſeemingly contrary to one another. We have here a kind of imitation of the works of nature, where different things are wonderfully joined in one harmonious unity: And as ſome things appear at firſt view the fartheſt removed from ſymmetry and order, which from the courſe of things we learn to be abſolutely neceſſary for the perfection and beauty of the whole; ſo diſcords being artfully mixed with concords, make a more perfect compoſition, which ſurpriſes us with delight. If the mind is naturally pleaſed with perceiving of order and proportion, with comparing ſeveral things together, and diſcerning in the midſt of a ſeeming confuſion, the moſt perfect and exact diſpoſition and united agreement; then the modern concerts muſt undoubtedly be allowed to be entertainments worthy of our natures: And with the harmony of the whole we muſt conſider the ſurpriſing variety of air, which the modern conſtitutions and modes of time or rythmus afford; by which, in our inſtrumental performances, the ſenſe and imagination are ſo mightily charmed. Now, this is an application of muſic to a quite different purpoſe from that of moving paſſion: But is it reaſonable upon that account, to call it idle and inſignificant, as ſome do. It was certainly a noble uſe of muſic to make it ſubſervient to morality and virtue; and if we apply it leſs that way, 'tis becauſe we had leſs need of ſuch allurements to our duty: but whatever be the reaſon of this, 'tis enough to the preſent argument, that our muſic is at leaſt not inferior to the ancient in the pathetic kind: and if it be not a low and unworthy thing for us to be pleaſed with proportion and harmony, in which there is properly an intellectual beauty, then it muſt be confeſſed, that the modern muſic is more perfect than the ancient. But why muſt the moving of particular paſſions be the only uſe of muſic? If we look upon a noble building, or a curious painting, we are allowed to admire the deſign, and view all its proportions and relation of parts with pleaſure to our underſtandings, without any reſpect to the paſſions. We muſt obſerve again, that there is ſcarce any piece of melody that has not ſome general influence upon the heart; and by being more ſprightly or heavy in its movements, will have different effects; tho' it is not deſigned to excite any particular paſſion, and can only be ſaid in general to give pleaſure, and recreate the mind. But why ſhould we diſpute about a thing which only ſtrangers to muſic can ſpeak ill of? And for the harmony of different parts, the defenders of the ancient muſic own it to be a valuable art, by their contending for its being ancient: let me therefore again affirm, that the moderns have wonderfully improved the art of muſic. It muſt be acknowledged indeed, that to judge well, and have a true reliſh of our more elaborate and complex muſic, or to be ſenſible of its beauty, and taken with it, requires a peculiar genius, and much experience, without which it will ſeem only a confuſed noiſe; but I hope this is no fault in the thing. If one altogether ignorant of painting looks upon the moſt curious piece, wherein he finds nothing extraordinary moving to him, becauſe the excellency of it may lie in the deſign and admirable proportion and ſituation of the parts which he takes no notice of: muſt we therefore ſay, it has nothing valuable in it, and capable to give pleaſure to a better judge? What, in muſic or painting, would ſeem intricate and confuſed, and ſo give no ſatisfaction to the unſkilled, will raviſh with admiration and delight, one who is able to unravel all the parts, obſerve their relations and the united concord of the whole. But now, if this be ſuch a real and valuable improvement in muſic, you will aſk, How it can be thought the ancients could be ignorant of it, and ſatisfy themſelves with ſuch a ſimple muſic, when we conſider their great perfection in the ſiſter arts of poetry and painting, and all other ſciences? How it comes that the ancients left us any thing to invent or improve? And how comes it that different ages and nations have genius and fondneſs for different things? The ancients ſtudied only how to move the heart, to which a great many things neceſſarily concurred, as words, tune, and action; and by theſe we can ſtill produce the ſame effects; but we have alſo a new art, whoſe end is rather to entertain the underſtanding, than to move particular paſſions. What connection there is between their improving other ſciences and this, is not ſo plain as to make any certain concluſion from it. And as to their painting, there have been very good reaſons alledged to prove, That they followed the ſame taſte there as in the muſic, i. e. the ſimple obvious beauties, of which every body might judge and be ſenſible. Their end was to pleaſe and move the people, which is better done by the ſenſes and the heart than by the underſtanding; and when they found ſufficient means to accompliſh this, why ſhould we wonder that they proceeded no further, eſpecially when to have gone much beyond, would likely have loſt their deſign. But, ſay you, this looks as if they had been ſenſible there were improvements of another kind to be made: ſuppoſe it was ſo, yet they might ſtop when their principal end was obtained. And Plutarch ſays as much, for he tells us it was not ignorance that made the ancient muſic ſo ſimple, but it was ſo out of politic: yet he complains, that in his own time, the very memory of the ancient modes that had been ſo uſeful in the

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education of youth, and moving the paſſions, was loſt thro' the innovations and luxurious variety introduced by later muſicians; and now, when a full liberty ſeems to have been taken, may we not wonder that ſo little improvement was made, or at leaſt ſo little of it explained and recorded to us by thoſe who wrote of muſic, after ſuch innovations were ſo far advanced.

This diſpute (which is perhaps too tedious already) ſhall be ended with a ſhort conſideration of what the boldeſt accuſer of the modern muſic, Iſaac Voſſius, ſays againſt it, in his book de poematum cantu & viribus rythmi. He obſerves, what a wonderful power motion has upon the mind, by communication with the body; how we are pleaſed with rythmical or regular motion; then he obſerves, that the ancient Greeks and Latins perceiving this, took an infinite pains to cultivate their language, and make it as harmonious, eſpecially in what related to the rythmus, or number and combination of long and ſhort ſyllables, as poſſible; to this end particularly were the pedes metrici invented, which are the foundations of their verſification; and this he owns was the only rythmus of their muſic, and ſo powerful, that the whole effect of muſic was aſcribed to it. And to prove the power attributed to the rythmus, he cites ſeveral paſſages. That it gives life to muſic, eſpecially the pathetic, will not be denied; and we ſee the power of it even in plain proſe and oratory; but to make it the whole, is perhaps attributing more than is due: it is rather to be thought the words and ſenſe of what's ſung, the principal ingredient; and the other a noble ſervant to them, for raiſing and keeping up the attention, becauſe of the natural pleaſure annexed to theſe ſenſations. 'Tis very true, that there is a connection between certain paſſions, which we call motions of the mind, and certain motions in our bodies; and when by any external motion theſe can be imitated and excited, no doubt we ſhall be much moved; and the mind, by that influence, becomes either gay, ſoft, briſk or drowſy; but how any particular paſſion can be excited without ſuch a lively repreſentation of its proper object, as only words afford, is not very intelligible; at leaſt this appears to me the moſt juſt and effectual way.

But let us hear what notion others had of this matter, Quintilian ſays, If the numbers of muſic have ſuch influence, how much more ought eloquent words to have? And in all the ancient muſic the greateſt care was taken, that not a ſyllable of the words ſhould be loſt, for ſpoiling the ſenſe, which Voſſius himſelf obſerves and owns. Pancirollus, who thinks the art loſt, aſcribes the chief virtue of it to the words.—Siquidem una cum melodia integra percipiebantur verba: and the very reaſon he gives, that the modern muſic is leſs perfect, is, that we hear ſounds without words, by which, ſays he, the ear is a little pleaſed, without any entertainment to the underſtanding: but all this has been conſidered already. Voſſius alledges the mimic art, to prove, that the power of motion was equal to the moſt eloquent words; but we ſhall be as much ſtraitned to believe this, as the reſt of their wonders. Let them believe it who will, that a pantomime had art to make himſelf eaſily underſtood without words, by people of all languages: and that Roſcius, the comedian, could expreſs any ſentence by his geſtures, as ſignificantly and variouſly, as Cicero with all his oratory. Whatever this art was, 'tis loſt, and perhaps it was ſomething very ſurpriſing; but 'tis hard to believe theſe ſtories literally. However to the thing in hand, we are concerned only to conſider the muſical or poetical rythmus.

Voſſius ſays, that rythmus which does not contain and expreſs the very forms and figures of things, can have no effect; and that the ancient poetical numbers alone are juſtly contrived for this end. And therefore the modern languages and verſe are altogether unfit for muſic; and we ſhall never have, ſays he, any right vocal muſic, till our poets learn to make verſes that are capable to be ſung, that is, as he explains it, till we new model our languages, reſtore the ancient metrical feet, and baniſh our barbarous rhimes. Our verſes, ſays he, run all as it were on one foot, without diſtinction of members and parts, in which the beauty of proportion is to be found; therefore he reckons, that we have no rythmus at all in our poetry; and affirms, that we mind nothing but to have ſuch a certain number of ſyllables in a verſe, of whatever nature, and in whatever order. Now, what a raſh and unjuſt criticiſm is this! if it was ſo in his mother tongue, the Dutch, I know not; but it is otherwiſe in Engliſh. 'Tis true, we don't follow the metrical compoſition of the ancients; yet we have ſuch a mixture of ſtrong and ſoft, long and ſhort ſyllables, as makes our verſes ſlow, rapid, ſmooth, or rumbling, agreeable to the ſubject. Take any good Engliſh verſe, and by a very ſmall change in the tranſpoſition of a word or ſyllable, any body who has an ear will find, that we make a very great matter of the nature and order of the ſyllables. But why muſt the ancient be the only proper metre for poetry and muſic? He ſays, their odes were ſung, as to the rythmus, in the ſame manner as we ſcan them, every pes being a diſtinct bar or meaſure, ſeparate by a diſtinct pauſe; but in the bare reading, that diſtinction was not accurately obſerved, the verſe being read in a more continuous manner. Again he notices, that after the change of the ancient pronunciation, and the corruption of their language, the muſic decayed till it became a poor and inſignificant art. Their odes had a regular return of the ſame kind of verſe; and the ſame quantity of ſyllables in the ſame place of every ſimilar verſe: but there's nothing, ſays he, but confuſion of quantities in the modern odes; ſo that to follow the natural quantity of our ſyllables, every ſtanza will be a different ſong, otherwiſe than in the ancient verſes: (he ſhould have minded, that every kind of ode was not of this nature; and how heroic verſes were ſung, if this was neceſſary, is hard to be diſcovered, becauſe in them the dactylus and ſpondeus are ſometimes in one place of the verſe, and ſometimes in another.) But inſtead of this, he ſays, the moderns have no regard to the natural quantity of the ſyllables, and have introduced an unnatural and barbarous variety of long and ſhort notes, which they apply without any regard to the ſubject and ſenſe of the verſe, or the natural pronunciation: ſo that nothing can be underſtood that's ſung, unleſs one knows it before; and therefore, no wonder, ſays he, that our vocal muſic has no effects. Now here is indeed a heavy charge, but experience gives me authority to affirm it to be abſolutely falſe. We have vocal muſic as pathetic as ever the ancient was. If any ſinger don't pronounce intelligibly, that is not the fault of the muſic, which is always ſo contrived, as the ſenſe of the words may be diſtinctly perceived. But this is impoſſible, ſays he, if we don't follow the natural pronunciation and quantity; which is precariouſly ſaid; for was the ſinging of the ancient odes by ſeparate and diſtinct meaſures of metrical feet, in which there muſt frequently be a ſtop in the very middle of a word, was this the natural pronunciation, and the way to make what was ſung beſt underſtood? He tells us, they read their poems otherwiſe. And if practiſe would make that diſtinct enough to them, will it not be as ſufficient in the other caſe. Again, to argue from what's ſtrictly natural, will perhaps be no advantage to their cauſe; for don't we know, that the ancients admitted the moſt unnatural poſitions of words, for the ſake of a numerous ſtile, even in plain proſe; and took ſtill greater liberties in poetry, to depart from the natural order in which ideas lie in our mind; far otherwiſe than it is in the modern languages, which will therefore be more eaſily and readily underſtood in ſinging, if pronounced diſtinctly, than the ancient verſe could be, wherein the conſtruction of the words was more difficult to find, becauſe of the tranſpoſitions. Again the difference of long and ſhort ſyllables in common ſpeaking, is not accurately obſerved; not even in the ancient languages; for example, in common ſpeaking, who can diſtinguiſh the long and ſhort ſyllables in theſe words, ſatis, nivis, miſit. The ſenſe of a word generally depends upon the right pronunciation of one ſyllable, or two at moſt in very long words; and if theſe are made conſpicuous, and the words well ſeparated by a right application of the long and ſhort notes, as we certainly know to be done, then we follow the natural pronunciation more this way than the other. If 'tis replied, that ſince we pretend to a poetical rythmus, ſuitable to different ſubjects, why don't we follow it in our muſic? Tho' that rythmus is more diſtinguiſhed in the recitation of poems, yet our muſical rythmus is accommodated alſo to it; but with ſuch liberty as is neceſſary to make good melody; and even to produce ſtronger effects than a ſimple reciting can do; and I would aſk, for what other reaſon the ancients ſung their poems in a manner different from the bare reading of them? Still he tells us, that we want the true rythmus, which can only make pathetic muſic; and if there is any thing moving in our ſongs, he ſays, 'tis only owing to the words; ſo that proſe may be ſung as well as verſe: that the words ought naturally to have the greateſt influence, has been already conſidered; and there is no reaſon why the ancient poetical rythmus ſhould have the only claim to the pathetic; as if they had exhauſted all the combinations of long and ſhort ſounds, that can be moving or agreeable: but indeed the queſtion is about matter of fact, by this defence of the modern muſic, it is not all alike good, or that there can be no juſt objection laid againſt any of our compoſitions, eſpecially in the ſetting of muſic to words; there is only to be ſaid, that we have admirable compoſitions, and that the art of muſic, taken in all that it is capable of, is more perfect than it was among the old Greeks and Romans, at leaſt for what can poſſibly be made appear.

BRITISH MUSEUM 3 DEC 42

FINIS.

"While we were at the waterfall some half score peasants, chiefly women and girls assembled just out of reach of the spring and set up - surely the wildest chorus that ever was heard by human ears - a song not of articulate sounds, but in which the *voice was used as a mere instrument of music*, more flexible than any which art could produce - sweet, powerful, and thrilling beyond description"

BRITISH MUSEUM 3 DEC 42

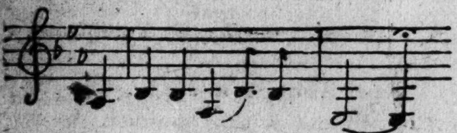
Mr Southey - quoted under Wordsworth's sonnet 'on approaching the Staub-Bach Lauterbrunnen.

THE LADY BASS.

EXPERTS' OPINIONS ON THE NEW SINGER.

Miss Violet Elliott's remarkably deep bass voice, an account of which appeared in yesterday's "Daily Mail," is already a topic of discussion among musicians.

Perhaps the "lower D" does not convey much to those without a musical training, so we reproduce the following phrase from Miss Elliott's part in the curious arrangement of "Annie Laurie" which will be sung by the ladies' quartette of which Miss Elliott is a member:—



This phrase only takes her voice to E flat—the D is half a tone lower. This E flat formed the limit of Mme. Patey's wonderful voice—a fact which Dr. Cummings, the principal of the Guildhall School of Music, pointed out.

"I have not heard Miss Elliott sing," he said, "but D is a wonderfully low note, and one is justified in terming it phenomenal. Mme. Patey sang the E flat, I remember, in 'Israel in Egypt.'

"All we ask our contraltos to do here," he continued, "is the low G."

Mr. Herbert Sims Reeves also admitted that the lower D was rarely if ever, sung by a woman. He thought that the climate of Australia was peculiarly favourable for the development of the human voice. Mr. Isidore de Solla also agreed that the note had not been sung for a very long time.

Miss Elliott's voice was tested yesterday by Professor W. Henry Thomas, of the Royal Academy of Music and the Guildhall. The wonderful lower D was reached without effort, while upwards she touched G, two octaves and a half higher. "There can be no doubt that Miss Elliott has a wonderful compass," said Mr. Thomas. "The point, however, that struck me most was the excellence of the middle register. So often, when one gets a voice with remarkably high and low notes, the middle ones are weak. The human voice may, in fact, be likened to a piece of elastic, for when stretched it is apt to be weak and thin in the centre. After hearing Miss Elliott I agree with what has been said about her in the 'Daily Mail.'

"The piano to which Miss Elliott sang when she saw me was low-pitched, and the D she sang would be equivalent to D flat according to the older and higher pitch."

June 1911

St. James' Church, Kidbrook.

HOMAGE ANTHEM,

Composed for the Coronation of Their Majesties
KING GEORGE V and QUEEN MARY,
by
Sir FREDERICK BRIDGE, M.V.O., M.A., Mus. Doc.

Rejoice in the Lord, O ye righteous: it becometh well the just to be thankful.

Blessed is the nation, whose God is the Lord: and the people whom He hath chosen, for His own inheritance.

The Lord looketh from heaven, He beholdeth all the sons of men. He considereth all the inhabitants of the earth. He fashioneth their hearts alike. He considereth all their works.

There is no king that can be saved by the multitude of an host. A mighty man is not delivered by much strength.

Behold, the eye of the Lord is upon them that fear Him: upon them that hope in His mercy. To deliver their soul from death, and to feed them in the time of dearth. Our soul hath patiently tarried for the Lord: for He is our help and our shield. Our heart shall rejoice in Him, we have hoped in His Holy Name.

Let Thy merciful kindness, O Lord, be upon us as we do put our trust in Thee. Amen.